American Cinematographer

L. P. A.
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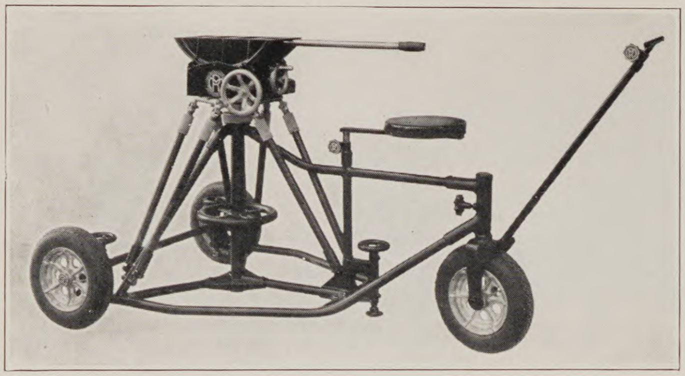

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SUITE 1222 GUARANTY BUILDING, HOLLYWOOD, CALIFORNIA
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Volume XI **JANUARY, 1931** **Number 9**

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PUBLISHED MONTHLY by THE AMERICAN SOCIETY of CINEMATOGRAPHERS, INC., HOLLYWOOD, CALIFORNIA
Established 1918. Advertising Rates on Application. Subscription: U. S., $3.00 a year; Canada, $3.50 a year; Foreign, $4.00 a year; single copies, 25c
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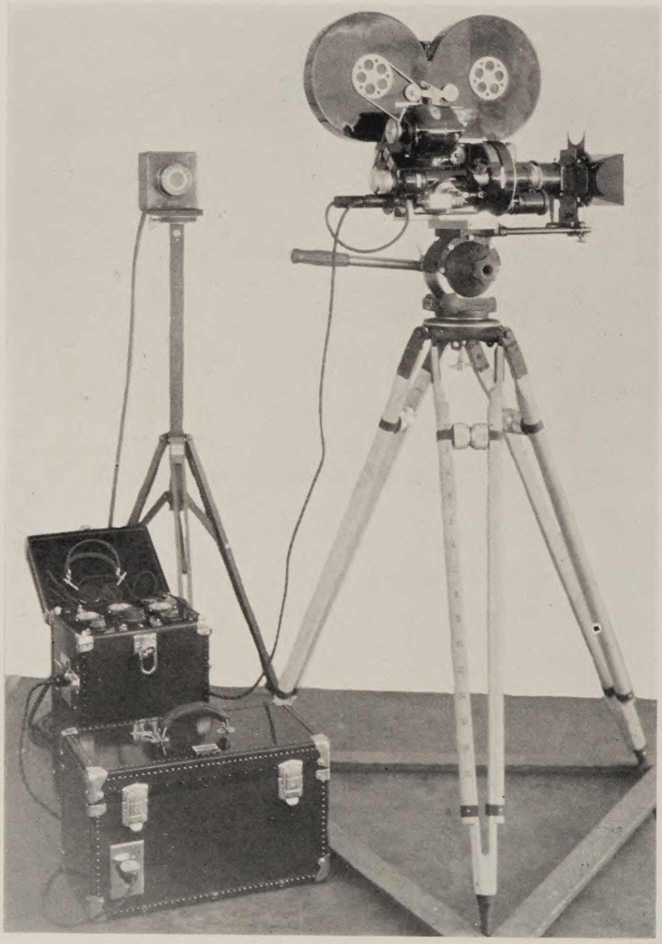

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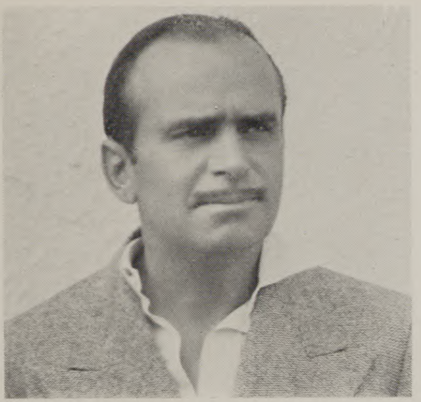

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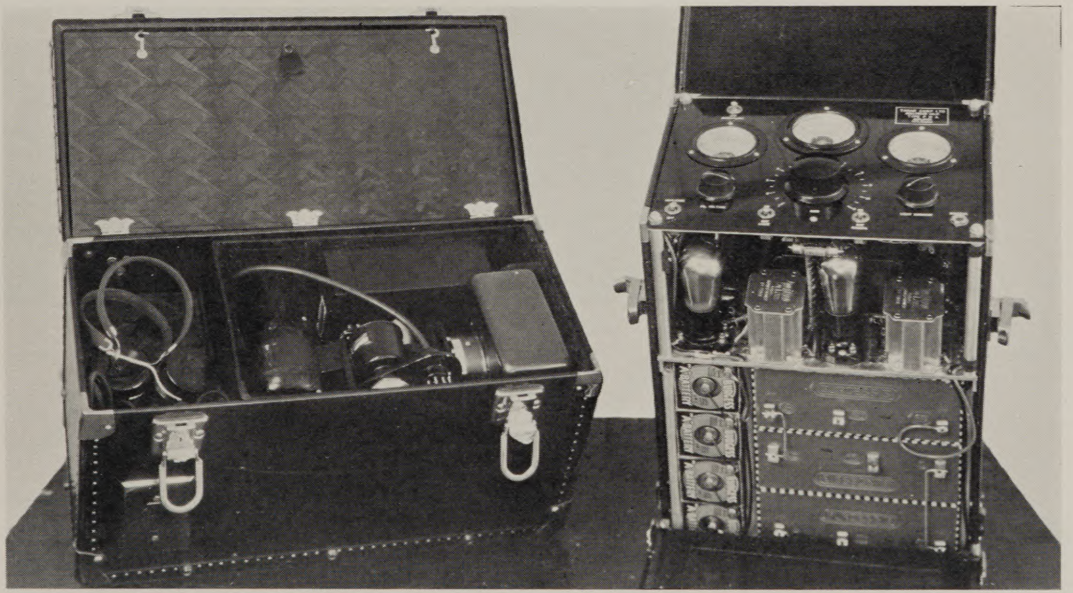

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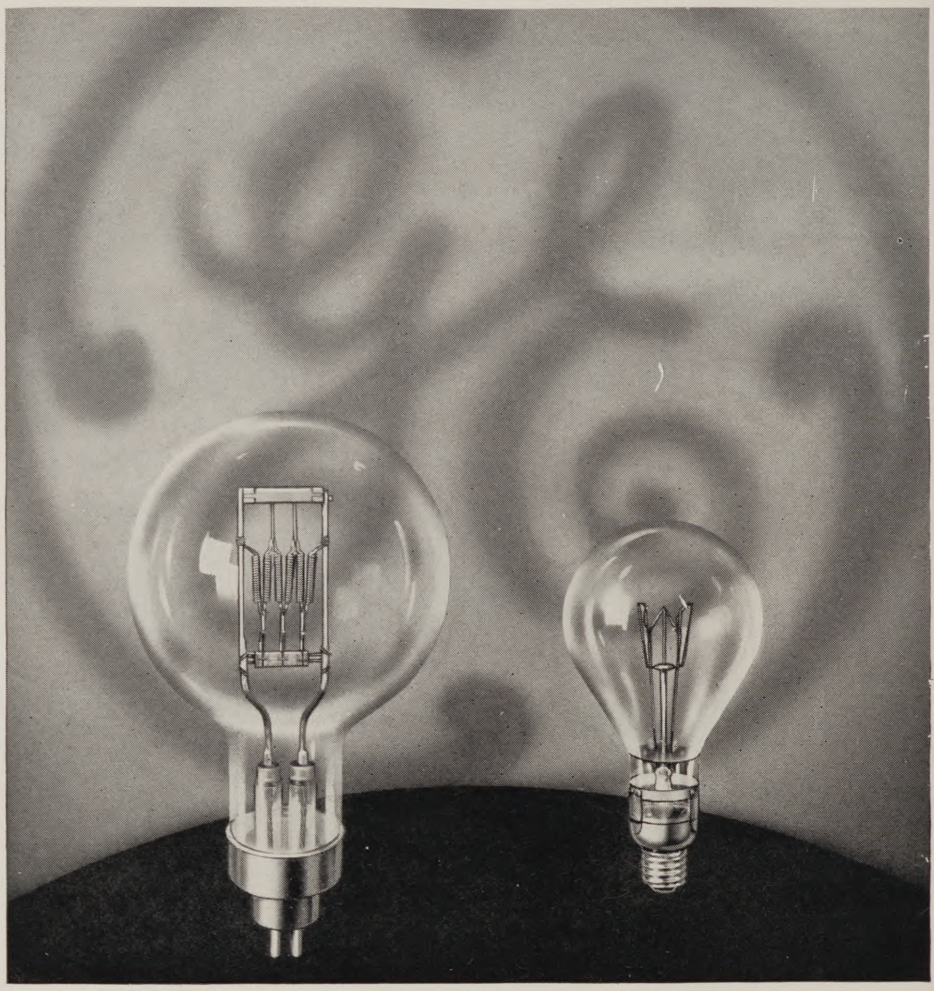

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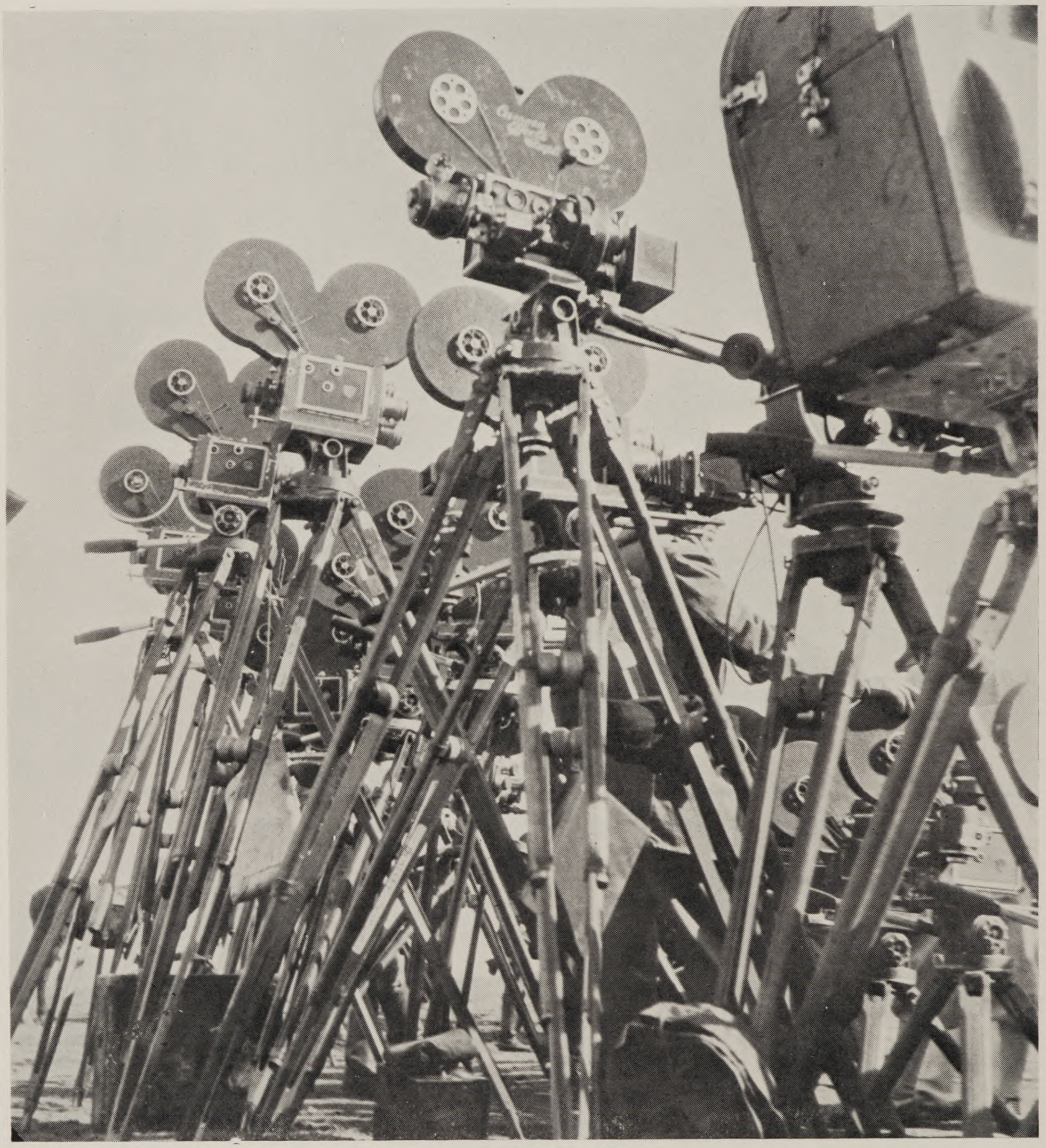

Cameras

Elmer G. Dyer, A. S. C.

Screen Definition

by **DR. L. M. DIETERICH**
Consulting Engineer

Part III

CONSIDERING influence of filter use upon definition, we want to dwell at first upon the optical characteristics of the carrier medium for a filter color or tone. Leaving gelatine filters for later consideration, glass as a carrier medium becomes of interest, the more so as its optical characteristics are the same for glass diffusion discs and have not been analyzed in Part II, so prevent repetition.

It may be remarked here that they are also of interest when any glass plate is used in front of the photographic lens as, for example, in blimps.

The optical characteristics are shown in exaggerated relative proportions in Diagram No. 1.

If **O** is the selected object point, it will image at **I** if lens system **L** produces a 1:1 magnification. If glass plate **G** is interposed between object point **O** and lens system **L**, then the sample light rays (six are shown), shown as dotted lines and converging at image point **I** are refracted by glass plate **G** and pass through lens system **L** as shown by full lines. They converge at image point $\mathbf{I}^1$ which is identical to the image of object point $\mathbf{O}^1$, produced by lens system **L** if there were no glass plate **G** placed in front of the lens **L.** Analysis of this diagram shows that the distance $\mathbf{OO}^1$ and relative distance $\mathbf{II}^1$ increase with the thickness of the glass plate, or in other words, the focal value in general increases with the interposition of a glass plate between the object and the lens system. This increase is not only governed by the conditions above mentioned but results also in a decrease of the depth of focus for a given lens position for the following reason:

A scrutiny of Diagram No. 1 shows, as before mentioned, that for a given power of lens system **L** and a given separation between **G** and **L**, the distance $\mathbf{II}^1$ increases with a decrease of the distance of object point **O**.

The practical results can be most clearly shown when we consider a normally extreme depth of focus which we get when the lens covers at universal focus position a great depth of object field.

For points **O** far distant from the lens, the distance $\mathbf{II}^1$ becomes very small and the circles of confusion controlling out-of-focus effects are not increased.

The closer **O** becomes to the lens, the greater becomes the distance $\mathbf{II}^1$, the circles of confusion therefore increase and out-of-focus effects become apparent for object distances which are of acceptable focus without the presence of the glass plate.

Analysis of the optical characteristics of the light rays passing through the plate shows, furthermore, (see diagram 2) that a full spectrum white ray is spectrumized by the glass plate according to the obliquity of the incident ray, the thickness of the glass plate and the refractive index of the glass forming such plate.

We have, therefore, another condition adversely influencing sharp definition by introducing chromatic aberrations which increase the residual aberrations of the well corrected lens system **L**.

The combined results as deduced from above analysis should be known to the cameraman in order to enable him to safeguard the definition results he is striving for.

It is, of course, supposed that the glass plate, be it used as a diffusion disc, a filter base, or a sound proofing element in "blimp" construction, is made of "optical" glass, i. e. with absolute parallel surfaces and of uniform optical material characteristics throughout.

But even under those best glass plate conditions the following facts remain:

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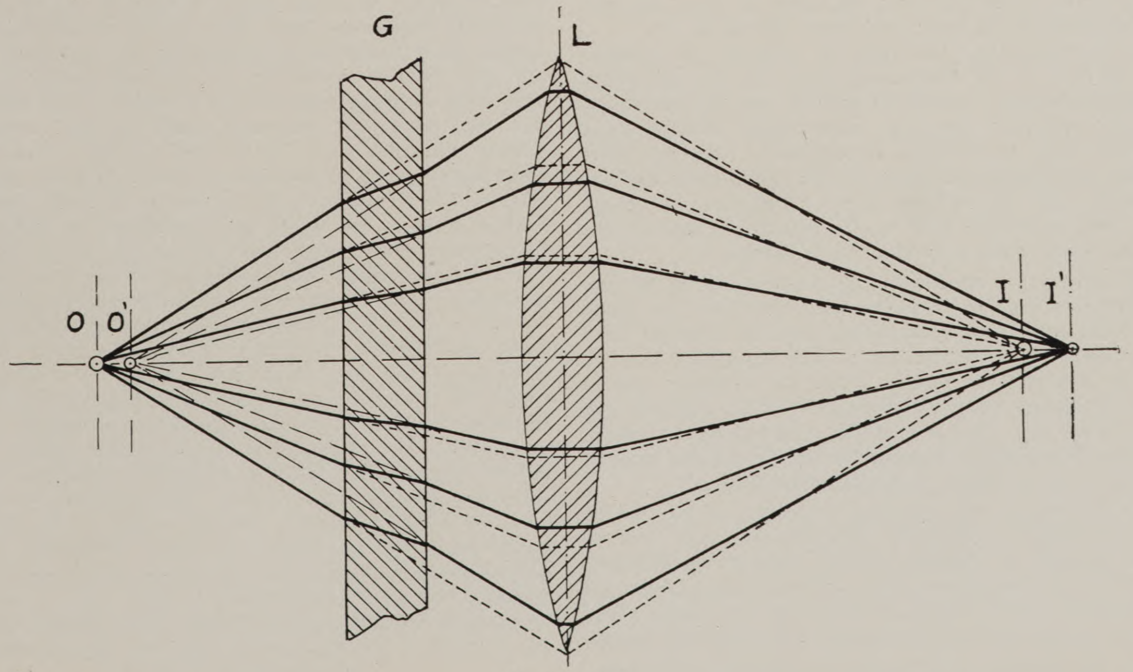

Diagram No. 1

"Versions"

The Problem of Making Foreign-Language Pictures

by **GEOFFREY SHURLOCK**

Supervisor of Foreign Production, Paramount-Publix Studios

PROBABLY the greatest single problem at present confronting the motion picture industry is that of properly serving foreign patrons. Until recently a motion picture—wherever it might be made—had a world audience to play to. The complete standardization of technical equipment made it possible to present a film in any movie theatre in the world. The only change needed to adapt a film to meet the needs of any foreign-language group was the substitution of foreign-language titles for the original English ones.

With the coming of the talking picture, this has changed. Dialogue, no matter how sparingly used, is nevertheless an essential part of the picture, and to adapt a talking picture to foreign consumption, this dialogue must all be in the language understood by the various language-groups. It has been irrefutably proven that foreign-language dialogue cannot be "dubbed" into a picture made in another tongue. Therefore, if today's pictures are to play to the same world-wide audience they formerly entertained, separate versions of the film must be made for each language-group which is to be reached.

This gives rise to many problems, commercial, technical, esthetic, and psychological, which are as yet only half solved. The crux of the situation lies in the fact that the major part of the world's technical resources, both in men and material, is concentrated in Hollywood, while—despite that city's polyglot population—the majority of the outstanding foreign players are found elsewhere. The question therefore is: which group is it most advisable to bring to the location of the other; which arrangement will make for the most efficient production and the most satisfactory working conditions? In other words, which will make the best pictures?

It is a most perplexing problem, and one that will in all probability remain unsettled for a long time to come, for each solution has much in its favor, and much against it.

Viewed commercially, the plan of making all foreign-language pictures at the Hollywood studio has the advantage of speedier production, centralized control, and the availability of the vast technical resources accumulated through more than twenty years of intensive development. On the other hand, these advantages are offset by the considerable expense of importing and maintaining stock companies of actors, directors, and writers in five or six languages, and by the considerably lower costs of production in Europe.

Viewed technically, conditions favor the centering of foreign-language production in Hollywood, for there are found both the most experienced technicians, and the greatest array of modern equipment. On the other hand, equipment may be transported to where the foreign actors are available, and in the major producing centers of Europe—France, England, and Germany—there are enough capable technicians to form, with perhaps the addition of some Hollywood-trained experts, the nucleus of an excellent producing organization.

Viewed esthetically, the question is simply: is the Art of the Talking Picture sufficiently different from the Art of the Silent Picture to demand entirely separate production-treatment in order to appeal to the different language-groups (which formerly were equally receptive to the same silent production), or are the two sufficiently similar so that merely translating the dialogue, as formerly the captions were translated, will be enough to adapt a screen plot to meet the entertainment needs of the various groups?

Psychologically, the problem is to decide whether the undoubted theoretical advantage of having every person in the company—from the director and star to the meanest assistant-prop-boy—working, speaking and **thinking** in the same language is great enough to be of practical value, or not.

Obviously, there are two equally good answers to each of these questions. Hence, each producing organization is attacking the problem in its own way. Some prefer one method, and some prefer the other. A few are even experimenting with both.

The Paramount-Publix Corporation, for instance, has, after some experimentation determined upon the plan of making the majority of its foreign-language product abroad, except in cases where the star or stars—like Maurice Chevalier, Claudette Colbert, or Marlene Dietrich—is of unusual international popularity, and capable of playing in two or more languages. In such cases, it is obviously best to make such foreign versions at as nearly the same time and place as the English version as is possible. In the majority of cases, however, it has been found best to treat the foreign versions as entirely separate productions, making them abroad, with casts entirely composed of foreign players, and at any time which is convenient.

Spanish pictures, however, may be made in Hollywood, due to the proximity of Mexico and Latin America. These countries not only furnish the necessary players, but also the largest market, which makes it advisable that the Spanish spoken in these versions should be of the Latin-American variety rather than that of Spain, which is not so popular with the people of these countries.

To provide facilities for making all other foreign-language films, however, we have found it advisable to create an entirely new studio near Paris. The majority of existing European studios were found to be inadequate for large-scale production, and since the installation of sound equipment necessitates practically complete rebuilding of a studio, it was decided that the most economical procedure would be the creation of an entirely new film plant. To this end we have erected a complete sound studio at Joinville-sur-Seine. In every respect this plant is new throughout, and represents the most modern production plant in the world, as it embodies the lessons gained during more than twenty years of activity at the firm's New York and Hollywood Studios. Six months ago the site was a wheatfield; today it is a large, modern production plant including nine sound-stages, laboratories, recording-channels, power-plant, administration buildings, carpenter, machine, paint, and other shops, and every other minute detail of a fully-equipped studio. The technical equipment is almost completely American, including such familiar units as Western Electric recording equipment, Mole-Richardson Incandescent lights, Bell & Howell and Mitchell Cameras, Paramount "Blimps," Moviolas, and many other familiar devices. The personnel, on the other hand, is largely European, although many of the department heads, and technical experts are either Americans, or Hollywood-trained Europeans. The executives are all well known in America; the chief being Robert T. Kane, who is well known for his long and distinguished career in this country. His assistant is Richard M. Blumenthal, and the General Manager is

(Continued on Page 22)

Machinery or Art in Motion Pictures

by **J. TARBOTTON ARMSTRONG**
Curator of Motion Picture Museum, University of Southern California

THE MOTION PICTURE is big business, and as such it is operated. The objective of big business is money, and everything is being done by the various companies to outstrip each other in getting more theatres and better equipment. But the theatres and equipment are really for the pictures—not the picture for the theatres and equipment. And besides, with the increase of education, public taste is improving.

The attempt to satisfy the intellect of a ten year old child is disgusting to the better educated portion of the motion picture audience. Likewise the producers forget that children are often the severest critics, and will detect fallacies in story development just as quickly as adults. What is more, the average child of today can understand almost all subtle developments of plot. Even sex is not above the comprehension of many children.

While equipment may be improved, the quality of the average production continues on the same level. The same plots are used over and over. The success of one picture will bring sudden releases of pictures of the same type from every studio. By the time the whole cycle, including quite a few inferior productions, is released, the public will be so tired of that form of picture that the best offering would not have a chance of success for some time to come. It would be far better if the studios would stop this duplication of types of pictures.

The reasons for avoiding duplication from the production standpoint may also be mentioned. In the first place getting a production ready in time to compete with another involves hasty producing. In the second place, it is impossible for all the writers at all the studios to get new ideas for the same topic at the same time. Ideas for stories do not come to order. In the third place, this attempt to imitate will often result in miscasting, upon the principle that a picture of this type must be produced whether the acting talent be available or not. Much of this sort of thing happened during the recent musical comedy deluge.

There is a false standard of measuring the greatness of a production by the cost. The cost of the picture is often included as an advertising feature. But acting, directing, and photography are arts, and writing is likewise an artistic venture. A picture employing ten characters may be as great as a dramatic achievement, and a greater artistic achievement, than a spectacular production involving an expenditure of a million dollars (and expected to bring back three million).

There will always be some types of pictures involving heavy costs. With these pictures every care should be taken to have the result justify the cost. Mere pageantry will not satisfy the average audience. No matter how complicated the scenes, or how large the supporting cast, the story must be woven around a few main characters—and it must be a story, rather than an excuse for spectacle. Sometimes it is rather hard to keep the two together, but it can be done.

These spectacular productions, however, often come closest to the development of one thing generally missing in the average talking picture. This is rhythm. With the succession of scenes involving massive movements, carefully photographed, some rhythm must result. With poor sound conception and continuity the result, of course, would be not rhythm, but chaos. Likewise the intermingling of trifling dialogue would shatter the rhythm of these big scenes. By this it is certainly not meant that the dialogue writer should give pioneers, for instance, highly polished lines—but he should avoid lines which contribute nothing to the picture. Spectacular productions must depend a great deal upon rhythm for their success.

But other pictures also demand rhythm, and very few have it. Some may regard rhythm as artificial, but acting is, after all, artificial. No play or motion picture can depict every single incident that might happen in a slice of real life, and most certainly, every speech that might be spoken in reality can not be spoken on the screen.

Voices must be, for the most part, pleasing and harmonious. Every effort must be made to have what happens appear natural, but at the same time, the interest of the audience must be held. Actors should always remember that they are not speaking to a microphone, but to several million people, or rather, that several million people are watching their interpretation of their parts. They must also remember to keep their voices, as well as their bodies, in character. Of course racketeers and similar characters are permitted to have harsh voices, to a certain extent, but even they must speak distinctly.

But keeping voices in rhythm is difficult unless proper dialogue is supplied, and memorized. Much of the dialogue so far has been rather spasmodic. Besides the voices, the various sounds included in a picture must also be kept in rhythm, or the effect upon the audience will be jarring.

Lack of rhythm has been one of the faults with some of the musical productions. Songs were used with ridiculous frequency, and some were often included of such inferior quality that it might have been better to have never released them. While music must have a rhythm, musical comedy is liable to be very lacking in rhythm unless the greatest care is taken. The words of the dialogue must be almost as rhythmical as those of the songs, and both must fit together in a smooth pattern.

There is rhythm even in slapstick. Perhaps it is to rhythm that many favorite comedians owe their popularity. Chaplin, Lloyd, Keaton, and Langdon, all leading comedians, and all depending upon the ridiculous for their popularity, at the same time work with far more perfected rhythm than some of the stars of more serious pictures. All fully realize the value of pantomime, and of slowing up their movements when necessary. And all, while slapstick artists, know how to eliminate excessive action.

Some actors become stars because of their art, but some others become stars because of a type of acting which is not always art, but which the public grows to expect of them. The artist generally remains popular over a period of time, while the type actor loses popularity with unexplained suddenness. Douglas Fairbanks, Mary Pickford, and others remain popular because they are artists as well as actors—because they act—rather than merely take directing they might not understand.

A few well done pictures mean more to the average star or featured player than a large number of mediocre ones. Of course, enough pictures must be made to supply the demand, but even so, more care can be taken with all of them. It is these pictures made to fill the general demand which have the greatest number of faults. The long-run pictures are for the most part of high calibre, but pictures which have but a week or so of big time are often not so great.

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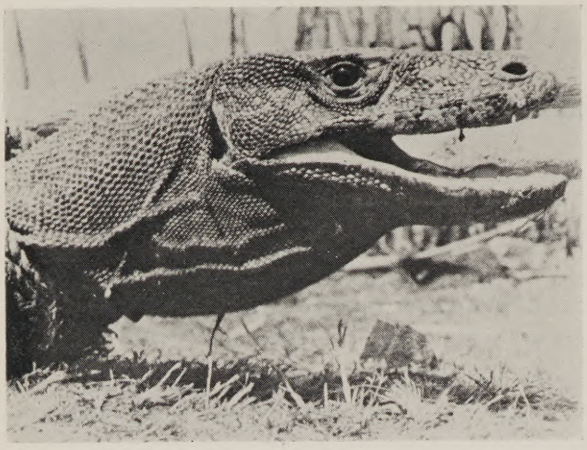

The Capture and Photographing of Varanus Komodensis

by **Philip M. Chancellor, A. S. C., F. R. G. S.**

The accompanying report by Mr. Philip M. Chancellor dealing with the photographing of the almost extinct Varanus Komodensis, is one of a series of reports which Mr. Chancellor, a member of the American Society of Cinematographers, will present through this magazine in the coming months. The home of the Komodo Lizard is Flores Island. Mr. Chancellor secured cinematographic records of these reptiles that in years to come should prove priceless to the scientific world.—Editor's Note.

ONE of the main problems which confronted the expedition was securing permits to collect and to photograph the Komodo Lizard. The Dutch Government very rightly protects the lizard, which is in some danger of becoming extinct. It is such a curiosity that it is greatly in demand for museums and zoological gardens. To the date of writing there have never been any successful cinematographic recordings of the lizard in natural life outside of the sixteen thousand feet which we secured.

The necessary permits being in order, a joint and cooperative expedition was formed for the trip to Flores Island, Chancellor-Stuart Field Museum and the Museum of Buitenzorg, the latter under the capable leadership of Dr. de Jong. There were five white members in the party.

The expedition sailed from Macassar bound for Flores Island in October, 1929. The little island steamer wound through a series of small islands, and arrived at Labuan Badjo on the third day. Labuan was a small settlement whose main activity was pearling, an industry conducted by an Australian-Dutch concern. Here a few days were spent arranging for carriers and making test shots of the light, which proved to be of a very high actinic quality. We then proceeded into the mountains, the home of the lizard.

Camp was established at a small rest-house sometimes used by the Resident for deer-shooting. The "rest-house" was entirely a bamboo and pandanas affair with three rooms. This, however, did very well as a kitchen, store-room and laboratory. Sleeping was all under the stars. The laboratory consisted of a roughly made table and a box, where a changing bag could be operated easily, both for loading and to make tests in a field test tank.

The natives thereabout had been informed of our coming and had selected likely spots for photographing the animals. The location proved to be a dried-up marsh, surrounded by mountains which practically formed a crater around it. A fallen

Mr. Chancellor in the "blind" photographing the lizards.

A beautiful specimen of the Komodo Lizard. (Courtesy of Field Museum of Natural History).

tree made an excellent camera-blind. A problem presented itself immediately. The lizards would not come out in the full sunlight on account of the heat. Oddly enough, exposure to the sun would kill them in about an hour. For this reason filming them was restricted to before eight-thirty in the morning and after five in the afternoon. The light fortunately was particularly strong and the atmosphere free of haze,—quite the reverse of Java. Some of the shots were made with the sun not quite over the rim of the hills, with the subject in shadow.

In the first attempt the lizards were baited to within twelve hundred feet of the camera, but later they were brought to eight hundred feet. An Akeley camera with a 17½" f5.6 Taylor-Hobson Cooke lens was used. Most of the shots were made at f5.6+.

It was fascinating to see the lizards feeding. The bait was a colt which had died in the village. The carcass was staked to the ground with strong lashings to prevent its being carried off. The lizard would dive in up to his shoulders, and then, lifting his head as if in challenge, would gulp down tasty pieces of meat with blood and saliva dripping from his mouth.

Certain noises would not disturb the animal. On one occasion when a feast was going on and there were two big fellows about, I changed four magazines and the slight click of the door did not disturb them in the least. Again by whistling in imitation of a bird to attract their attention, they would start and look about. There had been for some time a supposition that the Varanus was deaf, but evidently it was incorrect. One afternoon a squadron of four Dutch military aeroplanes flew over, and though I could not see the planes, the drone of the motors was plainly audible to the practically unbroken silence. The two lizards that were at the time feeding also heard it and took to the hills, not to return that day. That was about the last place in the world I would expect to have the day's shooting spoiled by aeroplanes. The Varanus could run with surprising speed, though they seem far too big and sluggish to be able to move at all. They could easily outrun a man, as one was chased before the camera one day. At first he looked puzzled and a bit undecided, but when he started he exercised such force that clods of dry dirt were flying behind him.

In all, thirteen lizards were captured. These were distributed about the world in various museums, three going to Field Museum of Chicago where, at this time of writing, they are being prepared for a group.

The natives caught them by the use of a noose and small hunting dogs. The lizard would stand and attempt to fight the dogs, while some brave soul would pass the noose over its head with the aid of a bamboo pole. After that they would close in, and, grabbing him by the tail, would bind him fast to a pole to which he was securely tied. However, they were so strong that they would work loose, and on several occasions we had to get up at night to make them fast. At Labuan they were put into suitable wooden boxes and so were transported to Buitenzorg where the last time I saw them they were doing well and not minding captivity, tho there is a great question as to how they will live in any foreign country.

(Continued on Page 43)

Two of the huge lizards photographed by Mr. Chancellor.

"Noiseless Recording"

Western Electric System

by **H. C. SILENT**

Development Engineer, Electrical Research Products, Inc.

IT IS common knowledge that, when a sound print of the variable density type is played in a reproducing machine, the volume of the reproduction is low if the print is dark and if a compensating adjustment is not made by turning up the fader. In addition, the ground noise of the film is also low. It has been a problem to take advantage of this latter fact with the former methods of recording because the mere act of printing the sound track dark, while it reduced the ground noise, also reduced the volume of sound from the film. This, of course, was undesirable. In the method of recording which is now being employed, these undesirable effects are overcome by regulating the density of the sound track at the recorder automatically.

It is well-known that there is a particular value of density or transmission of the photographic emulsion which permits of the loudest volume from the film without exceeding the photographic limits of good quality. Deviation from this point is possible without distortion if the volume or percentage modulation applied to the film is reduced. This can be taken advantage of by causing the film to be dark on low volume modulation, and as modulation becomes higher we lighten the film to the point where it has the greatest possible carrying capacity. If this can be done without distorting the volume of sound reproduced by the film, then we shall have a condition where the ground noise from the film is low during periods of low sound. Thus quiet intervals in the sound will be quiet and the ground noise, even though it rises with the sound, will always be more or less drowned out by the increased sound so that there is an effect of considerably reduced ground noise. In other words there is produced a constant signal to noise ratio in which the signal is always very predominant over the noise, and since noise is most noticeable in the quiet intervals there is a very real reduction in the amount of the ground noise.

There are a number of methods by means of which this variation in the transmission of the film can be effected. If we examine for a moment the light-valve employed in the Western Electric System of Recording, we shall see how one of these methods can be applied. In the past, this system has employed a light-valve in which two ribbons were normally spaced .001" apart. These ribbons were vibrated by the sound currents, moving but a slight distance on weak currents and a considerable distance on loud currents. The strongest currents would just bring the ribbons into contact as they vibrated. The space between them was therefore greater than necessary to

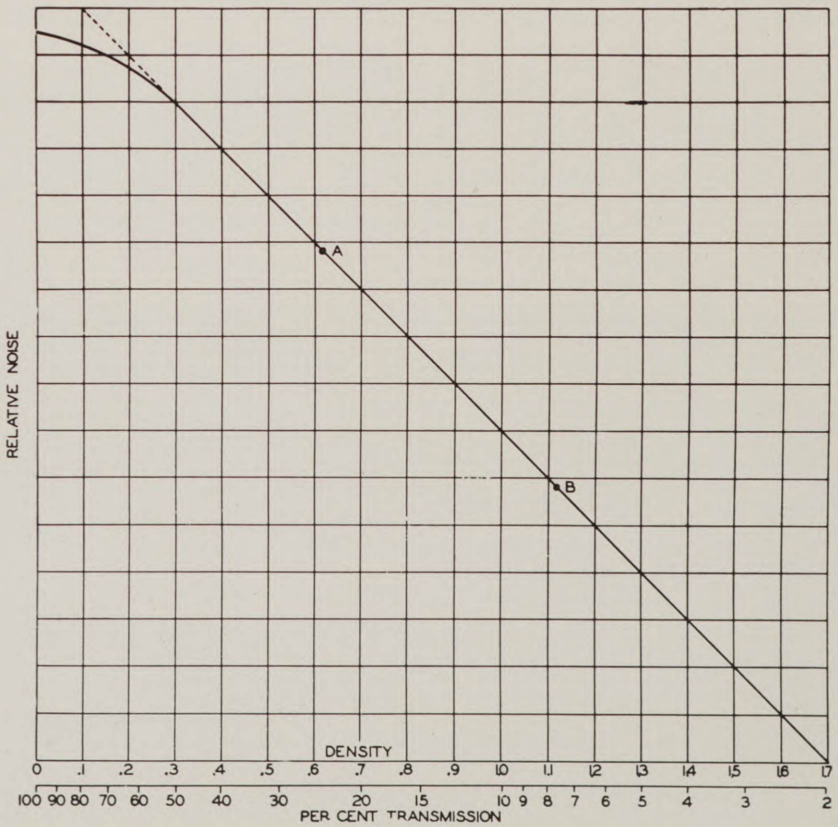

FIGURE 1
Approximate Variation of Reproduced Noise vs. Density of Sound Track.

permit the free vibration of the ribbons on weak currents. A sound track recorded under this method had a constant density corresponding to the one mil spacing between the ribbons and this density was caused to vary with the voice currents but maintained always its constant average.

Under the new system of recording an auxiliary electrical circuit is associated with the light-valve, so that when the sound currents are small and the ribbons need vibrate over but a very small amplitude, they are brought close together and this small vibration almost entirely fills the space between them. Then, as the sound increases in loudness, so that the ribbons are required to vibrate with a greater amplitude, the spacing is automatically increased by the electrical circuit, so that it is always just a little more than sufficient to permit this vibration of the ribbons. This is equivalent to altering the average spacing of the ribbons, so that it is at all times proportional to the envelope of the sound currents. Now, if we regard the amount of light which passes through the average spacing of the ribbons to the film, we find that this light is considerably reduced during moments of silence or of low sounds, which results in a dark sound print. As the ribbons open up for increased sound currents, the amount of light correspondingly increases and a lighter sound print results. Since the actual vibration of the ribbons under the action of the sound currents has been undisturbed in this process, the amount of change of light which reaches the film and in turn the reproducing photoelectric cell has been unaltered even though the total amount of light has been decreased. Since the amount of change of light is unaffected, there is no volume distortion on reproduced sound as a result of this method of recording.

The extent to which the light-valve ribbons may be closed during quiet intervals is necessarily limited. They must not be completely closed, because it is not possible to construct a device which can instantaneously sample the amplitude of the sound currents and set the ribbons to their proper spacing without introducing expensive delay circuits as auxiliary equipment. Therefore, in setting up the device, the spacing of the ribbons is reduced to something considerably less than their normal spacing but not as far as complete closure. Furthermore, the latitude of the photographic emulsion is not infinite and also limits the extent to which the closure of the ribbons may be effected without exceeding the straight line part of the emulsion characteristic. Since this new method contemplates recording over the same part of the film characteristic, and within the limits of this characteristic previously utilized, there is no change in film technique. The processing which produced the best quality of reproduction with the former method gives the best quality with this new method.

Referring to **Fig. 1**, which is an approximate characteristic of the ground noise obtained from film of various densities, the point A indicates the approximate density employed in normal recording. By shifting the ribbons to have something less than their normal spacing, we can increase the density during the quiet portions of the sound track to point B. This results, then, in a reduction of the noise in the quiet intervals. Then, as the sound currents are applied to the valve, its spacing automatically varies, so that it at all times has sufficient carrying capacity, as represented by the spacing between the ribbons, to carry the applied sound currents. A slight amount of margin is always established as a factor of safety, in order that a sound which builds up suddenly will not clash the ribbons. The manner in which the carrying capacity of the light valve or, in other words, the spacing of the ribbons varies with the applied sound currents is illustrated in **Fig. 2.** It will be seen from this that for weak sound currents below a certain minimum amplitude the ribbon spacing is always the minimum, and the average spacing is unvarying. As the sound currents

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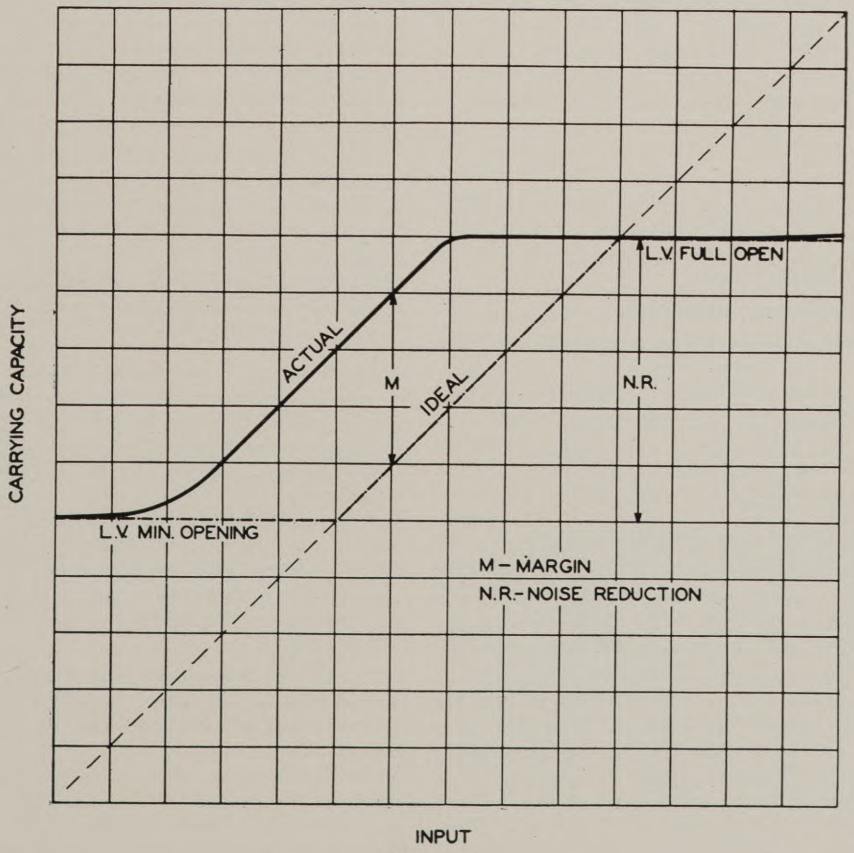


FIGURE 2
Light Valve Carrying Capacity vs. Input.

Standardization of Photo-Electric Cells

by **N. R. CAMPBELL**

A Communication from the Staff of the Research Laboratories of the General Electric Company, Ltd., Wembley, England.

Courtesy of the Physical and Optical Societies, London

PHOTO-ELECTRIC cells are now regular articles of commerce, but there is a very wide divergence in their manufacture. There are some purposes for which every maker of photo-electric cells offers to provide cells; and yet those made by different makers for the same purpose agree in hardly a single feature. The object of these notes is to suggest that it is desirable that photo-electric cells should be standardized in some respects at least.

Standardization may have two objects. It may seek to fix by convention certain properties of the standardized article, or it may seek to establish some agreed system of describing its properties. The two kinds of standardization are, of course, properly applicable to different kinds of properties. The first kind is applicable to properties that do not affect materially the efficiency of the article or to those that affect it so little that the gain arising from uniformity is greater than the loss arising from standardizing any but the most efficient form. The second kind is applicable to the properties that directly determine efficiency.

In the matter of photo-electric cells there is room for both these kinds of uniformity. A very large proportion of the cells sold at the present time (perhaps 90 per cent.) are used for the reproduction of talking films and for picture telegraphy. The efficiency of cells for these purposes is not affected very greatly by their geometrical form or by the arrangement of their terminals, while any lack of uniformity in this matter makes it impossible to substitute the cells of one maker for those of another; users of cells and, in the long run, all but the least competent makers must suffer from this lack of interchangeability. Here is a clear case for the first kind of standardization. On the other hand, the standardization in this sense of the cathode emission, which is one of the main factors determining the efficiency of the cell, would be disastrous to progress. Here, however, there is room for a standardization of the second kind which would persuade makers to give data of the emission that they offer according to some uniform system, so that the promise of one maker may be directly compared with that of another.

Standard Gas-Filled Cells

Let us start with the first problem and consider, first, size and shape.

Designers of talking-film and picture-telegraphy apparatus like their cells to be small. On the other hand, there is a limit to the size of cells below which they become difficult to make and—possibly this is not exactly the same limit—below which the highest efficiency is unattainable. Maximum dimensions for cells and minimum dimensions for the apparatus to take them should therefore be fixed, preferably in the form of the dimensions of a cylinder enveloping the cell. For the diameter of this cylinder 45 mm. may be suggested. Some existing cells have greater diameters and some existing apparatus smaller diameters; but this appears to be a reasonable compromise between the needs of makers and users.

The length of the cylinder will be determined in part by the terminals and by the optical arrangements. The use of a standard 4-pin valve cap for at least one of the terminals is becoming general; it should be prescribed universally, for it provides the most convenient way of supporting the cell in a fixed position. It is less certain whether both terminals should be connected to separate pins on the same cap. The objection to this plan is insufficient insulation. There is no difficulty in obtaining an insulation resistance of 10 megohms, which is sufficient when the cell is to be used with rapidly varying lights; for then it is necessary to connect across the cell a resistence of not more than 1 megohm. But cells of this type, though primarily intended for use with such lights, are also suitable for other purposes, which may require an insulation resistance of at least 100 megohms; this is not easily attainable when both leading-in wires are brought out at the same end of the cell into the same cap. However, it may be observed that the leads, even if they are not brought out at the same end of the cell, may be connected to pins on the same cap by means of an exterior wire; this wire can be severed and separate connection made, if higher insulation is required. Accordingly the question may be left to the decision of users. If a second terminal, independent of the valve cap, is used, it should be a screw terminal of standard size, and a convention laid down as to which of the terminals is to be the anode and which the cathode.

The position of the window must now be fixed; by "window" is here meant generally the part of the wall of the cell on which the light should fall so as to strike the cathode in the most appropriate fashion. The centre of the window should be at some standard distance from the bottom of the valve cap and the top of the base into which the pins of the cap fit. 55 mm. may be suggested here; this would bring the centre about 25 mm. above the junction of the valve cap and the glass of the cell; but valve caps differ a little in length. Further the area of the window should be prescribed. So long as all the light enters the window, the efficiency of the cell generally increases somewhat as the area of the window is diminished; hence a minimum area should be prescribed. It is probably sufficient that the cell should use efficiently all the light falling on a circle 15 mm. in diameter.

When these matters are fixed, makers will not differ very widely in the overall length of the cell, although those who prefer the cylindrical form will want more length than those who prefer the spherical. The length of the enveloping cylinder might be fixed at 120 mm. The framework into which the maker will have to fit his cell and for which the user will have to provide in his apparatus will then be that shown in the accompanying figure.

Lastly, there is the anode voltage. Here, at present, there is wide divergence of practice. Some cells on the market cannot be used with voltages as high as 100, others are apparently designed for voltages greater than 300. A low anode voltage presents advantages to the user who has to provide the H. T. supply, but, if it is very low, it necessarily involves some sacrifice of efficiency. Up to a certain limit, increase of anode voltage, and consequent decrease of the pressure of the gas-filling, can be made to give greater magnification, especially under light varying with high frequency. Accordingly it is desirable to fix the standard voltage as high as other considerations permit.

In the circumstances in which cells of the type that we are considering will be used, it is probably necessary to suppose that the cell will be connected permanently to the standard voltage. The cells are liable to be subjected occasionally to very great illuminations, and it is necessary that they should be made so that a glow discharge cannot be maintained in them by this voltage, however great the illumination; that is to say, the standard voltage must be less, not only than the starting voltage of the discharge, but also than its stopping voltage. Since the illumination to which the cells are subjected in normal use is so small that, if they were to be subjected to no greater illumination, they could be used at voltages approaching very nearly the starting potential in the dark, the limitation thus imposed involves a very considerable sacrifice of output; the current will often not be as much as a quarter of what it might be if the voltage could be adjusted to the illumination. This is probably unavoidable; but makers of cells should aim at making the difference between the starting and stopping potentials as small as possible, and the magnification below the stopping potential as great as possible, so that the sacrifice may be as small as possible. Of course the limitation of the voltage applied to the cells in this particular connection will not prevent users who can work with adjustable voltages using them at full efficiency.

Other Cells

Cells made according to this standard specification would serve for many purposes other than that for which they are primarily intended. But they would not serve all purposes. In the class of gas-filled cells intended for use with white light, very much larger cells are occasionally required (e. g. for television by the scanning-spot method) and also very much smaller cells. Further, there are the distinct classes of vacuum cells intended for accurate measurement and of cells for use with ultra-violet light. But the number of these cells sold is so small and the variety of the purposes to which they are put is so large that it would be unwise to attempt at present any standardization of the first kind.

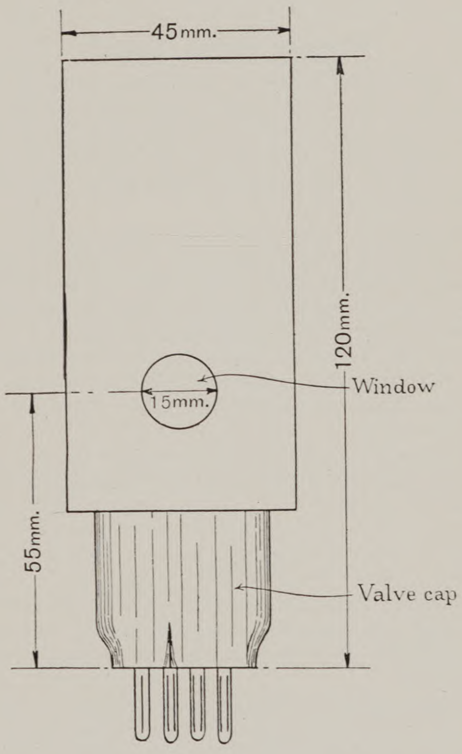
Specification of Emission

We turn now to standardization of the second kind, that is to say, the prescription of standard methods of stating the properties of cells.

The most important property is the relation of the current through the cell to the illumination. This relation depends, of course, on the nature of the light and the voltage applied to the cell. In vacuum cells the second factor needs no consideration; the voltage for which data are given should be the saturation voltage. Further, since in vacuum cells the current is closely proportional to the illumination, when the nature of the light is constant, the relation should be described by giving the emission, that is to say, the ratio of the saturated current to the rate at which radiation falls on the window. Since this ratio varies somewhat with the mode of incidence of the illumination, perpendicular incidence upon the window of the cell should be specified. There still remains some ambiguity, because the cathode is not always uniform over its surface, and the emission may vary with the part of the window illuminated; the average value should be given, obtained by an illumination uniform over the whole window.

For scientific purposes the most suitable way in which to describe the variation of the emission with the nature of the light is to give a curve relating o_y and γ, where o_y is the emission for wave-length Y. But the question of units remains. o_y is sometimes given in coulombs per calorie, sometimes in coulombs per erg, and sometimes in amperes per watt. The first method has historical priority, but it is less convenient practically than the third, which is, moreover, the method universally adopted for stating thermionic emission.

When cells are to be used with visible light, this is not the best method for practical purposes. The light to which such cells are most often subjected is that from a gas-filled incandescent lamp, and data referred to this light are essential. The color temperature of the tungsten filament may vary from 2600°K. to 3100° K., according to the size and life of the lamp; it would probably be sufficient to take as a standard a single temperature, say 2800° K. The emission for such light should be given in amperes per incident lumen, or per incident watt; lumens are to be preferred, partly because lamps are now usually rated in lumens, partly because, if watts are used, there is liable to be confusion between the watts consumed in the lamp and the watts radiated by it. Further, if a spectral distribution curve is given (and it is desirable), it should take into account the distribution of energy in the spectrum of this source. A curve giving simply o_y is misleading, because it fails to take into account the much smaller amount of energy available at the shorter wave-lengths. If such a curve is given for a potassium cell and a caesium-on-silver oxide cell, the maximum of the potassium curve is higher than that of the caesium, and it might be concluded that their emissions under white light were of the same order; actually that of the caesium is much higher, because its maximum lies in a region where far more energy is available. We suggest that the ordinates of the curve should be, not o_y, but o_y P_y, where P_y is proportional to Planck's function for the standard temperature. The area under the curve between two ordinates will then be proportional to the current obtained in response to that part of the radiation from the source which would be isolated by a filter perfectly transparent between these ordinates and opaque elsewhere. The factor of proportionality should be stated by giving the factor by which the product of this area in cm.^{2} by the incident illumination in lumens (or alternatively in watts) must be multiplied, in order to obtain the current in amperes (or alternatively microamperes). On the other hand, when the emission outside the visible spectrum, and particularly in the ultra-violet, is given, there is no reason to give anything but o_y; for the illuminants used vary so greatly in their spectral distribution that this will always have to be taken into account in estimating the current.



Less complete methods of stating the spectral distribution of the sensitivity are also worthy of consideration. Thus there might be given the mean emission for each of a series of wave-length ranges, e.g. 700-600, 600-500, . . . mμ; or the range of wave-length over which the emission does not fall below some prescribed minimum, together with the wave-length for maximum emission; or any of the other alternatives that will suggest themselves. If such methods are adopted, the emission should be given in amperes or microamperes per watt of energy incident on the window.

(Continued on Page 44)

Hal Hall SAYS

Happy New Year!

NOW COMES the season of resolutions, most of which we all break within a few weeks. Sometimes we feel that this business of resolving to do this or that, or not to do this or that, is wasted effort. However, if our resolution is good and we stick to it for only a week, our guess is that the world, perhaps, is better for it.

This has been a pretty rough year for a lot of us. The old wolf has howled at many a door, and the bank roll has become thinner than a sheet of Scotch tissue paper—but, it might have been worse. And present indications make us feel that things will be much brighter during the coming year.

As far as the American Cinematographer is concerned, the past year has been unusually kind. Circulation has increased more rapidly than any year in its history. Business has been excellent.

To all of you who have been responsible for this successful year, we extend our heartfelt wish for a Happy and Prosperous 1931.

Costs!

WE KNEW it was coming! This matter of bankers suggesting that negative costs be pared! And now Mr. Harley L. Clarke, President of the Fox organization, makes said suggestion.

Mr. Clarke, being a capable businessman with much experience in finance and public utility management, suggests that a top figure of $400,000 be set as negative cost. That no picture go beyond that in cost. You see, Mr. Clarke believes in control of manufacturing cost in proportion to earning power. Sound and logical reasoning makes him advance the idea of making pictures with the same idea in mind.

What Mr. Clarke, being a wise businessman, cannot understand is why invest sums from $1,000,000 to $3,000,000 in a picture when the potential profit is a dubious factor. Rather good judgment he shows, at that.

Of course, there are a lot of individuals in Hollywood who are beginning to shout that Mr. Clarke is all wrong, or words to that effect. Naturally, for there are a lot of useless heads that would have to drop by the wayside if his idea should be put into practice. If Mr. Clarke's suggestion would do nothing but eliminate some of those useless heads it would be worth while. Everyone connected with the picture business knows that there is a lot of dead wood attached to all the studios. If this were removed and the picture making business placed on a sound business basis there would be better times for those who really contribute to the making of pictures.

This writer has no quarrel with any of the dead wood, but he has often wondered, for example, why when an excellent director is hired to direct a picture, a gentleman called a supervisor has to be paid a big salary to see that the director, who has perhaps forgotten more in an hour than the supervisor has ever known, does his work well.

Perfectly ridiculous it seems, to pay a man to supervise the preparation of a story when said man sometimes cannot speak correct English. But it is done. Maybe Mr. Clarke has been wondering about that angle himself. More money paid to the technical men who for years have been relegated to the background, less to useless deadwood—that is this writer's suggestion. Then, perhaps, the studios would be able to keep negative costs down.

Some are already saying that entertainment value cannot be placed on the screen at $400,000 per picture. Well, we bet a plugged nickel that Columbia has been doing it for much less than that, and Columbia has given some good entertainment.

Wide Film

WIDE FILM, which for a time was practically the sole topic of conversation wherever two or more members of the film industry met, apparently has been relegated to the background for some time to come. At least, so it would seem; for now one finds himself being politely but firmly ushered out of any office in which he mentions wide film.

Sex Stuff!

THERE is a certain type of individual who apparently would sell his own soul or his grandmother's dead body for a few nickels. At any rate, that is the impression one sometimes gets when he hears of doings of some producers. I do not mean producers of the better class. I refer to those who duck around the corners when the shooting begins and who dirty up the motion picture bed by their manner of dealing.

Just heard that a film dealing with homo-sexual idea is being put out of State rights. It was shot by a foreign company. Maybe all right for those who have that type of mind that leans to delving into things of that sort. But not for the theatres of America where our wives and families go for recreation, amusement and education. Without a doubt such a subject, exploited properly, would drag in a lot of the morbid morons and bring in a lot of dollars. But such dollars in this writer's opinion are dirty. We of the picture industry have been fighting censorship. It is such tripe that brings it on.

Congratulations

MR. MARTIN QUIGLEY is to be congratulated upon securing Red Kann as editor of Motion Picture Daily, his new daily publication. In Kann he has secured a man who will be a real editor and who will carry with him the respect of the industry. Under his able guidance the paper should prosper. We congratulate Mr. Kann on being associated with Mr. Quigley, also. They are both fortunate.

Greetings

WE take this opportunity of welcoming Gilbert Warrenton, Jr., to Hollywood. The young man, whose father is one of Hollywood's best known cinematographers, arrived December 27, and weighed 7⅞ pounds.

His dad says he will be an A. S. C. man some day. If he is as good a photographer as his dad, we hope so.

An Interview with Lewis Milestone

by **HAL HALL**

WRITERS cannot grind out excellent stories to order in a period of a few weeks. The weakest link in the motion picture chain is the story. Dialogue in many otherwise good pictures is inane. In some cases it is inexcusably stupid.

Dialogue should be one of the greatest picture assets.

If picture artistry could keep pace with the amazing development made in the technical field of picture making we would soon attain a standard well nigh perfection.

There you have a few pertinent observations from a motion picture director who turned out what the industry has proclaimed the finest picture of the year. Lewis Milestone, director of "All Quiet On the Western Front."

When a man like Milestone speaks he usually says something. He said several mouthsful when he made the above remarks. A half hour with him and this writer knew fairly well why Milestone is an excellent director—why he makes pictures that are good. In the first place, he talks but little and thinks much. In the second place, he has intestinal fortitude enough to stand upon his own feet and say what he thinks, and then prove he is right by making pictures that are a credit to the motion picture industry.

His slant on talkies is particularly interesting. Since sound swept into the picture business a lot of directors who in the silent days were on top of the pile, have gone by the boards. Sound proved too much for them. This writer has heard many of them wail and lay the blame at the door of sound. But not Mr. Milestone.

"Sound has been the greatest asset that has been handed the director," says Milestone. "This is the way I see it. A man who is deaf and dumb goes into a grocery store and wants some sugar. He has to go through some peculiar motions before he can make the grocer understand what he wants. But overnight he acquires speech. He goes into the store the next morning and says 'Give me five pounds of sugar.' Just like that. Simple, isn't it? Well, that is the case with the picture making and directors. In the old silent days a director had to sweat blood many times to devise a way of putting over a situation. Today with sound someone simply tells it in a few words.

"And that brings me to dialogue," continued Milestone. "You hear a lot of picture people yelling that there is too much dialogue. Well, perhaps they are right—too much dialogue of the kind we have been given in our stories.

"But . . . let me go on record right now with this . . . I maintain that we can hold a screen audience for two hours with a screen play that is filled with conversation just as easily as you can hold them in the theatre of the spoken drama with a play of conversation. However, the dialogue, in conversation, must be scintillating. Scintillating conversation can hold and entertain just as well as action, many times better. Take the plays of Shakespeare for an example. They have come down through the years because of the scintillating conversation. So with the screen play. If an audience in the legitimate theatre can be held for two hours with the brilliant lines of a Shaw, Molnar, Chekhov or a Coward play, the same can be true with the screen. In everyday life we enjoy listening to a brilliant conversation by the hour, but we are bored to tears if the conversation is stupid. So it is with pictures.

"But, sad to relate, most of the dialogue is inane and stupid. But this is not the fault of the writers. I have no quarrel with them. They are to be pitied. Many a magnificent playwright has been brought out here and after being shown to a box of an office has been given a few weeks in which to turn out a screen play to order. That cannot be done. The ordinary good playwright takes a year to write a play. And that play is not written to order, either. It is a brain-child of the writer. That is why that play will run for perhaps two years in one theatre in New York and continue to run throughout the country. It has a real story and brilliant lines. In short, it was not turned out to order in a few weeks. And as long as writers are given that handicap in the picture business we will have poor dialogue.

"I am not attaching undue importance to dialogue. In 'All Quiet On the Western Front' you will recall that I depended mostly on action and psychological reactions. But when the characters spoke they had real thoughts to utter. Remarque put them there.

"In 'Front Page' which I am doing now I must depend upon dialogue more than action. With the brilliance, virility and humor of the lines, and with the advanced sound technique to use, the responsibility for its success or failure rests upon my own shoulders."

And right there is where Mr. Milestone differs from so many people in the picture industry. He is willing to assume responsibility and stand or fall with his work. No supervisors to tell him what to do. "Today I am freelancing," he says, "because I am determined to produce and direct pictures for which I can be responsible. There can be no set rules for the picturizing of a story. You cannot use factory methods. In my brief career as a director I have enjoyed versatility. Comedy in 'Two Arabian Knights', melodrama in 'The Racket,' tragedy in 'All Quiet On the Western Front,' and now comedy-drama in 'Front Page.' And in 'Front Page' I expect we will have success principally because of the sparkling dialogue written by Charles MacArthur, the author."

And then Milestone turned to the technical end and paid a compliment to cameramen and sound engineers. Throughout the years the cameramen have been steadily advancing in their art, he declares, and now the sound engineers are doing likewise.

"The technicians of the industry," he declares, "have indeed set a pace that will necessitate a terrific effort to follow. During the six months I have been away in Europe such progress has been made in talking picture technique that I am amazed. This progress in technique should prove a real inspiration to all of us. From our directorial, writing and producing points of view, we must strive to take every advantage of the new developments placed at our disposal by these technical geniuses.

"While the technicians have been laboring day and night to perfect sound inventions that make talking pictures possible, not enough attention has been paid to the writing and telling of stories. Our weakest link is the story. That must be improved.

"As I look about me in this industry and see the work that the technical men are doing and have done it makes me proud of the fact that I started in pictures as a technical student, thence to become a film editor. And as a student I shall continue to sit at the feet of the masters."

So, there you have a few real thoughts from a real thinker and doer. There may be many who will disagree with him. There always are in the picture business. But—he insists upon standing upon his own feet, and he has given us something to look upon in "All Quiet On the Western Front." One rather likes taking his hat off to such a man.

Noiseless Recording

(Continued from Page 15)

build up to near their maximum amplitude, it is seen that the average spacing of the ribbons (or their carrying capacity) is gradually increased up to a maximum which corresponds to that of the normal light valve. As the input is further increased, there is no further increase in the ribbon spacing, and clash occurs as in the normal light-valve.

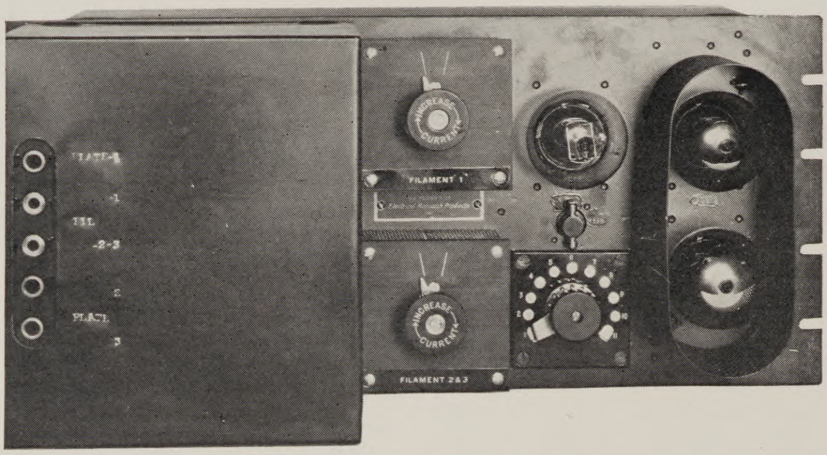


Figure 3. Noise Reduction Amplifier

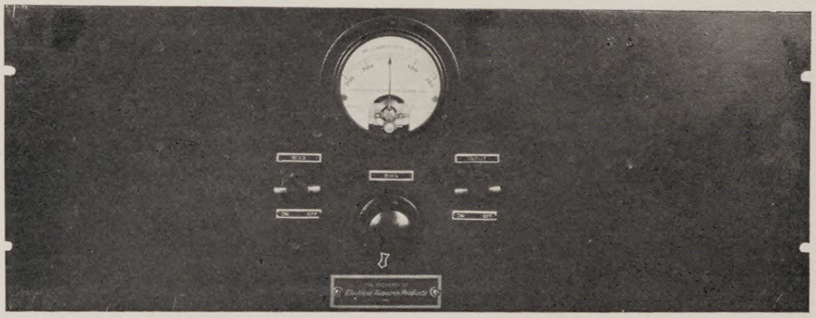


Figure 4. Noise Reduction Control Unit

It is entirely possible to continue the carrying capacity of the ribbons upward by allowing their spacing to exceed the normal spacing. No useful purpose is served by this, however, since the carrying capacity of the photographic emulsion would be exceeded by so doing and an effect equivalent to clashing of the light-valve would be obtained. Therefore, the device has been purposely arranged so that photographic overload and light-valve overload occur simultaneously, if the recording lamp has been set for normal recording.

The general principles of noise reduction for sound records on film may be applied to other than the present form of light-valve recorders by making circuit changes as required by the particular type of equipments involved.

Operation of the apparatus employed in this recording system is relatively simple, although considerable time and effort have been spent in its development. The equipment is divided into two units—an amplifier located usually at the location of the main amplifiers and a control unit fed by the amplifier and located at the film recorder. These units are shown in **Fig. 3** and **Fig. 4.** Adjustment of these units is simple and means are provided for checking the adjustments quickly and at fairly frequent intervals.

At the present time commercial recordings are being made with a reduction of ten decibels in the ground noise. It is expected that as more experience is gained in the use of this equipment, the noise reduction may be increased. Even ten decibels is a very noticeable reduction and permits an extension of the volume range to a point where sound previously completely obscured in ground noise becomes definitely a part of the reproduction with a consequent considerable enhancing of the dramatic effect and naturalness. The practical elimination of this ground noise in the theatre gives to the audience a feeling of being present at the action and a removal of the mechanical from the sound. The average theatre goer's reaction seems to be one of finding the picture "easy to listen to" and possessing a naturalness which all but places it in the class of "original" instead of "reproduction."

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THE ABOVE PAPER was presented at a meeting of the Technicians Branch of the Academy of Motion Picture Arts and Sciences, held at the Universal Studios, Thursday, December 11, 1930. It was accompanied by the presentation of special demonstration reels and a scene from the Paramount picture, "The Right To Love," which was recorded with the noise reduction device described above. This paper was published by the Academy and permission given for reproduction in this magazine. (The Editor).

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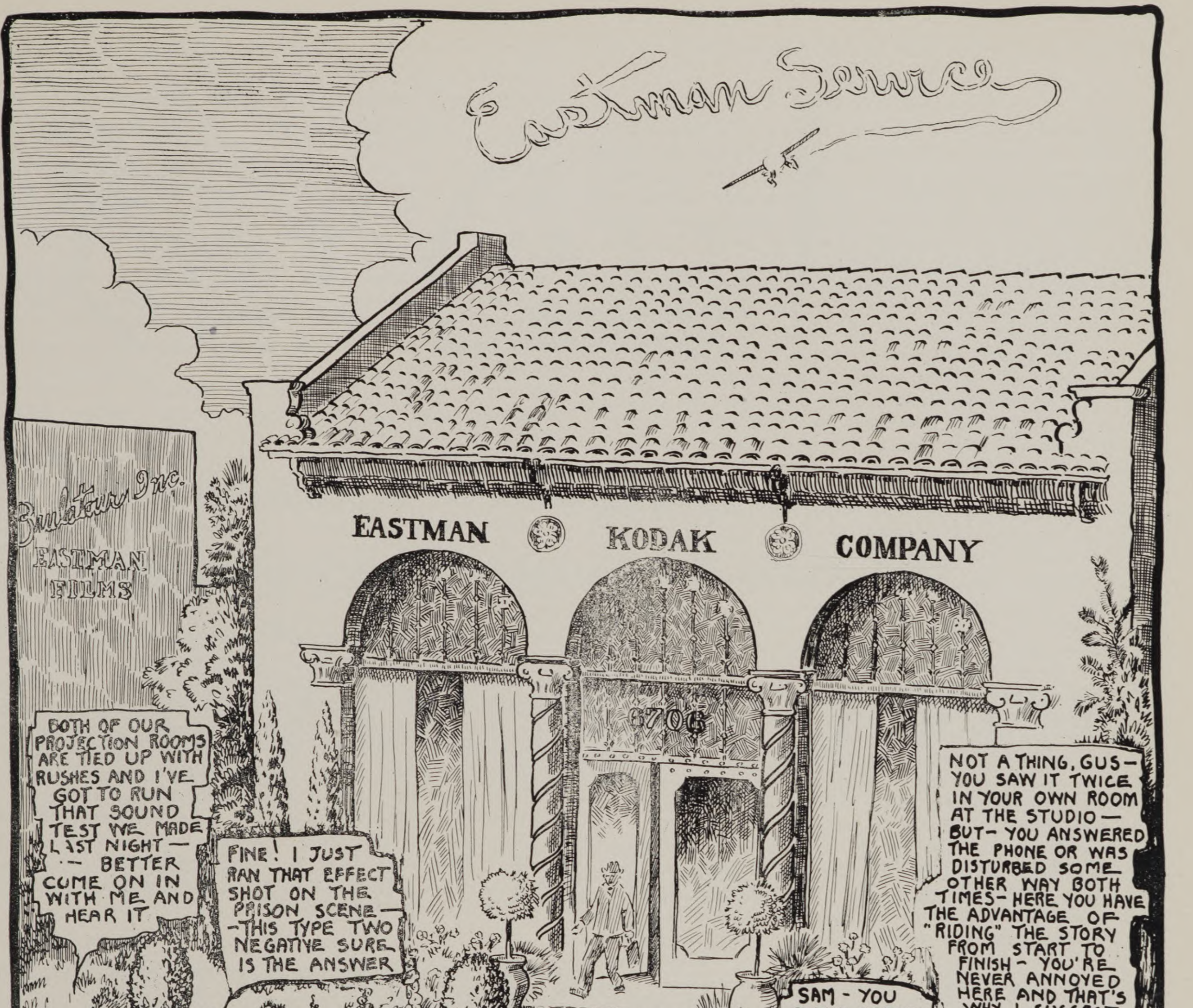
Fox Newsreel Outfit Going to South Seas

FOX is planning to send a news-reel unit to the South Seas to secure stock shots as well as material for its reel. The trip will occupy about eight months, the party leaving in January.


Eastman Service
Brulatour Inc.
EASTMAN FILMS
EASTMAN KODAK COMPANY
6706
BOTH OF OUR PROJECTION ROOMS ARE TIED UP WITH RUSHES AND I'VE GOT TO RUN THAT SOUND TEST WE MADE LAST NIGHT — BETTER COME ON IN WITH ME AND HEAR IT
FINE! I JUST RAN THAT EFFECT SHOT ON THE PRISON SCENE — THIS TYPE TWO NEGATIVE SURE IS THE ANSWER
NOT A THING, GUS — YOU SAW IT TWICE IN YOUR OWN ROOM AT THE STUDIO — BUT — YOU ANSWERED THE PHONE OR WAS DISTURBED SOME OTHER WAY BOTH TIMES — HERE YOU HAVE THE ADVANTAGE OF "RIDING" THE STORY FROM START TO FINISH — YOU'RE NEVER ANNOYED HERE AND THAT'S WHY I SUGGEST EASTMAN
SAM — YOU GOT A GREAT LITTLE OPERA THERE — IT LOOKS GREAT NOW — WHAT HAVE YOU DONE TO IT?
SAY — I THOUGHT THEY MOSTLY RAN TESTS AND SHORTS HERE — WHAT'S THE IDEA OF THESE FEATURES?
THEY'RE FOR TONIGHT — THE CAMERAMEN ARE GETTING THE LOW-DOWN ON HOW THE BOYS DO THE TRICK IN GERMANY AND FRANCE
FILMS
FILM
GLENN R KERSHNER

(Advertisement)

"Versions"

(Continued from Page 10)

Fred Bacos, who served in the same capacity with Rex Ingram. Several of the heads of the technical departments are former Hollywood men. Prominent among them are H. V. McAleenan, the Chief Recording Engineer; A. Ellis, the Chief Cutter, and Phil Tannura, the head of the Camera Department. Other former Hollywood Cinematographers now at Joinville are Harry Stradling, Georges Rizard, and Teddy Paull.

With these exceptions, the technical personnel is mainly European. The unanimous opinion of American film people who have travelled in Europe has heretofore been that the reason for the general technical inferiority of European productions has been due not to a lack of expert technicians, but to the lack of sufficient and proper equipment for them to work with. In a recent interview, Ernst Lubitsch recalled the fact that when he made one of his most famous early films in Germany, his lighting equipment consisted of exactly eight lamps, converted from wartime use. Of course, this situation has been more or less improved during the intervening years, but the limitation has still existed. It was the unavoidable result of the infrequent production which, for various reasons, could not be avoided. Yet there were—and are—many trained technicians there, capable of obtaining results of surprising quality even with the limited facilities that existed. Today, with ample technical and financial resources behind them, these men are being given a chance to prove their capability by entering production at an unheard-of scale.

The proportions of this new large-scale production can perhaps be best appreciated when it is recalled that all the studios of France together produced but 67 feature films in 1927, and 94 in 1928, while the 1930 production schedule at the Paramount Joinville plant alone calls for the production of 110 feature pictures and more than fifty short-subjects.

This production is regularly in at least four languages—French, German, Italian, and Swedish, while occasional productions are made in at least ten other tongues. A glance at the production records of the Joinville plant shows that: 20 productions have been made in French; 18 in Spanish; 16 in German; 14 in Swedish; 12 in Italian; 8 in Polish; 6 in Czecho-Slovakian; 7 in Hungarian; 5 in Portuguese; 3 in Roumanian; 2 in Dutch; and one each in Croatian, Norwegian, and Japanese.

The method of making these foreign-language productions has been planned with an eye to removing all possible hazard from production. The English version is first made in the Hollywood or New York studio in the usual manner. When this has been completed and previewed, the response is carefully studied, to determine whether or not the picture is likely to prove sufficient of a success to warrant foreign-language production. If the verdict is favorable, all possible information on the production of this English version is at once forwarded to the Paris plant. A complete script is sent, together with blue-prints and photographs of all the sets, costumes, etc., diagrams of each shot—including placement of lights and microphones—copies of the various production schedules, cost-sheets, etc., and, finally, a print of the completed film. From this pattern, the Paris Studio Staff make the required foreign-language versions. The scripts are translated by expert scenarists who are natives of the countries for which the different versions are intended, and who make whatever minor changes may be necessary in the treatment in order to perfectly please the residents of that particular country. Then the picture is cast, produced and edited in the usual manner.

Each foreign-language company is a complete unit in itself. Each comprises not only a director and cast, but a complete technical crew, and operates as an independent unit. The French unit may start first, to be followed closely by the German one, which, in turn, may be followed by the Swedish or Italian troupe, and so on down the line. The various schedules, however, are arranged so that there is no confusion between the units, and no friction.

By this method, it has been found that each foreign-language version can be made at a minimum production cost, which is as a rule approximately 33⅓ % below the production cost of the American-made, English version of the same film. This saving is due to two main causes. In the first place, salaries and material-costs are appreciably lower in Europe, and in the second place, the expenses of story-preparation, etc., which forms so large a part of both production time and cost, are practically eliminated for the foreign versions.

The question then arises, is all this trouble economically justified? The answer to this is, most emphatically, yes. It must be remembered that in the days of silent films, by far the larger part of the revenue derived from a picture was that derived from the foreign market. This is attested by the fact that a number of independent producers in Hollywood prospered solely on the strength of their foreign releases, having very inferior releasing arrangements in this country, and, in some cases, none at all. That foreign market still exists. Its theatres are still exhibiting pictures, and still demanding films to show. Furthermore, these theatres are, in increasing numbers, being equipped with quality sound-apparatus. Therefore, foreign-language talking-pictures must be made for these theatres. And they must be made to talk the languages which the patrons of these theatres understand. For the last fifteen years these audiences have shown an increasing preference for American pictures. This indicates that American story-material and construction appeal to them. Therefore, the only remaining question is how to give them this type of entertainment, in the form of talking pictures which speak their own language, in the most economical way. And that, in the experience of one of America's oldest and most successful producing firms, is the method outlined above. In this fast-changing industry, it may not be the method of tomorrow, but today it is the most efficient method of providing cinematic entertainment for the millions throughout the world who have by their patronage helped to make the motion picture the institution it is today, and who are, in consequence, entitled to the best in screen entertainment.

Acoustical Engineers Convene in Hollywood

LATEST developments in acoustical research were discussed at a series of meetings held in Hollywood December 12-13 when the Acoustical Society of America met in semi-annual convention with the co-operation of the Technical Bureau of the Academy of M. P. Arts and Sciences. Among the papers relating to the motion picture field were:

"Acoustic Power Levels in Sound Picture Reproduction," by S. K. Wolf and W. J. Sette, Electrical Research Products; "Direct Reading Phase Meter for Audio Frequencies," L. J. Sivian, Bell Telephone Laboratories; "Measurement of Reverberation Time and its Application to Acoustics of Talking Pictures," F. L. Hopper, ERPI; "Problems of Sound Picture Production," M. C. Levee, Paramount Studios; "Sound in the Artistry of Motion Pictures," Lester Cowan, Assistant Secretary of the Academy; "Factors Affecting Quality of Sound Pictures," F. L. Hunt, Bell Laboratories; "Relation of Room Acoustics to Sound Pictures," C. F. Eyring, Bell Laboratories; "Combined Reverberation Time of Recording and Reproducing," A. P. Hill, ERPI; "Power Requirements for Theatres," S. B. Epstein and J. G. Stewart, RCA Photophone.

RCA Photophone to Record Films in India

MADAN THEATRES, LTD., controlling more than 100 theatres in India, Burma and Ceylon, has acquired a complete sound recording unit and seven sound reproducing equipments from R-C-A Photophone, and upon arrival of the sound reproducing apparatus in Calcutta, will begin production of sound pictures for exclusive exhibition in its chain of theatres. F. Madan, director of Madan Theatres, has been in New York for the past two months.

LAST CALL!

The Boothe Company Aluminum Contest Ends on

JANUARY 15TH

$200.00 in Cash Prizes

YOUR Entry Must Be in the Office of the American Cinematographer by Midnight, January 15th, 1931, to be elegible. SEND IT NOW!

RULES OF CONTEST

1. The BOOTHE COMPANY, ALUMINUM MODEL—CASH PRIZE CONTEST began with October issue of the AMERICAN CINEMATOGRAPHER and ends at midnight of January 15th, 1931. Winners' names will be announced in the February number of this magazine. It is not necessary to be a subscriber to this periodical in order to compete.
2. Cash awards of $100—$60—and $40—representing first, second and third prizes will be given by BOOTHE COMPANY to the three contestants whose models, in the opinion of the judges are considered best adapted to practical and beneficial use in the production of motion pictures. Contestants, in case of a tie, will receive like awards.
3. Anyone associated with motion picture work may compete—amateurs as well as professionals. This also means all motion picture studio or motion picture theatre employees, or any organization whose products are used in motion picture work, except those in any way associated with the BOOTHE COMPANY or any other organization handling aluminum or aluminum alloys.
4. The judges are representatives of various branches of the motion picture industry. Their decision will be final.
5. Two photographs, a front and side view, with a description of the completed product, must be sent to "The BOOTHE COMPANY ALUMINUM CONTEST Editor," 1222 Guaranty Building, Hollywood, on or before January 15th, 1931. Be sure that this is accompanied by your name and address. No communications regarding this contest will be answered, unless accompanied by a self-addressed, stamped envelope. In no instance shall entries be sent until such request is made by the judges. Products must be made from aluminum or aluminum alloys. They may be wholly of aluminum or aluminum alloys, or may represent not less than seventy-five percent of these metals by weight. They may represent in their entirety a product useful to the motion picture industry, or may be a part, attachment or accessory to be used on some apparatus, machine or structure now employed.

New Lighting, Electrical and

LOOKING BACK over the year 1930 it is
considerable strides toward perfection. This
velopment of various mechanical units in lig
productions are revealing a continued increas
color and many other technical effects. Pictu
quired. This in turn has necessitated the dev
ment. The units displayed here, all of which
now stock equipment of, Mole-Richardson,
has been accomplished during the past year
years Mole-Richardson h
scores of mechanical dev
measurable part in the a
Foremost, perhaps, is
descent lighting equip
the greatest problems
tion of talkies. One
Richardson products
This company, ass
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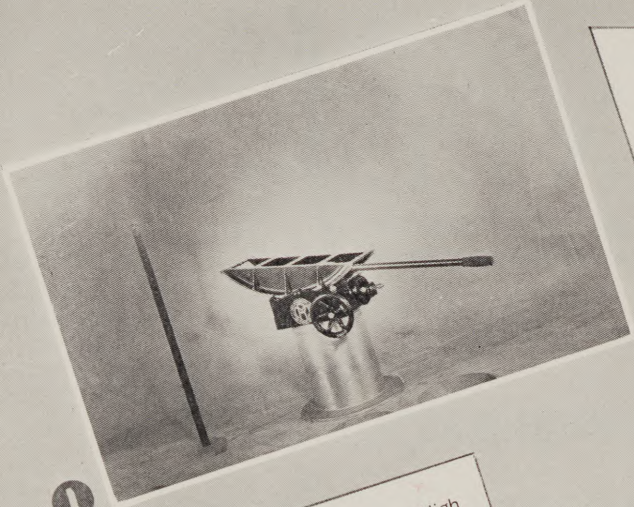

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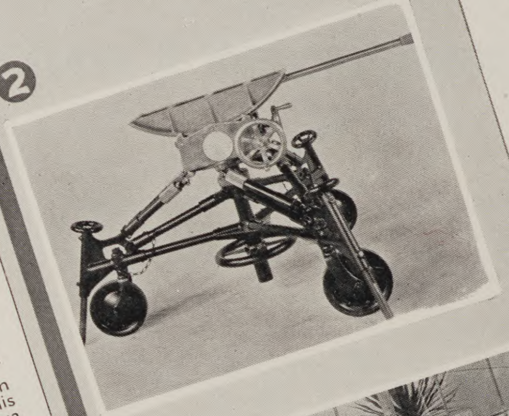
1. Tilt Head Mounted on High Hat. This unit permits of operating camera as low as ten inches above the floor. It consists of a base and a set of sectional rings.
2. Tilt Head Mounted on low Rolling Tripod. The low rolling tripod is designed for use where it is desired to operate camera from below forty-eight inch lens height.
3. Mole-Richardson Perambulator. This unique device serves to eliminate trouble in changing from travel to stationary shots. It is designed for both occasions.
4. Tilt Head Mounted on standard Rolling Tripod. This tripod supports the camera at a lens height of from 70½ inches high position to 48½ inches low position.
5. Interior View of Mole-Richardson Plant showing Assemble Room. Here all units are assembled and completed ready for delivery.
6. Mole-Richardson Sky Light. This lamp was developed particularly to illuminate large backings. It eliminates all light circles and dark rings.
7. Exterior View of Mole-Richardson Plant, located at 941 N. Sycamore, in the heart of Hollywood's industrial district.



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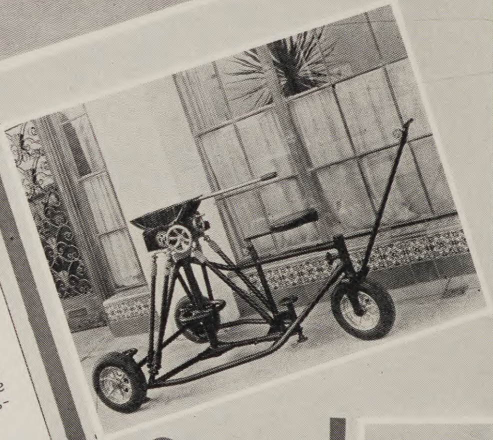

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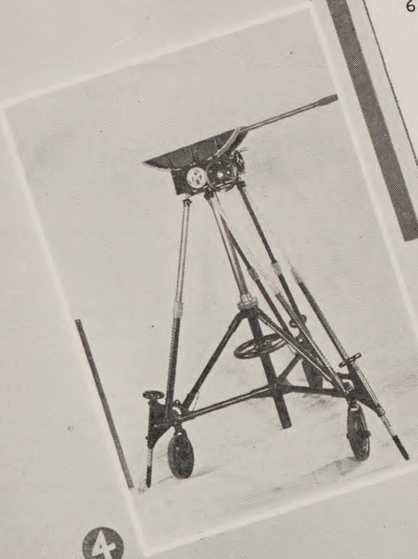

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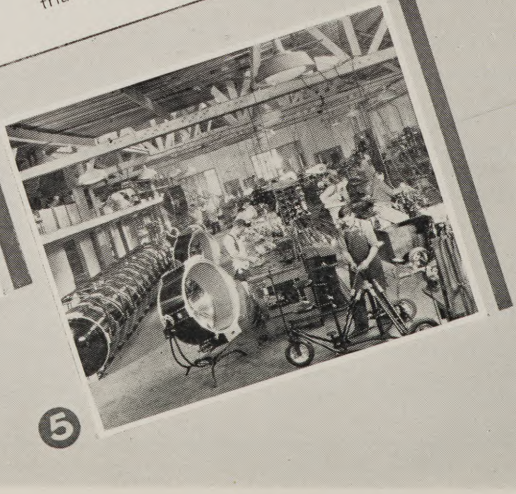

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Units Developed During 1930

arent that talking motion pictures have taken
be attributed, in a large measure, to the de-
, electrical, set and sound equipment. Present
scope, from the standpoint of sound, action,
today call for treatments heretofore not re-
ment of thousands of dollars of new equip-
been perfected and produced by, and are
lighting engineers, are illustrative of what
this particular field. During the last three
contributed and perfected
which have played an im-
cement of sound cinema.
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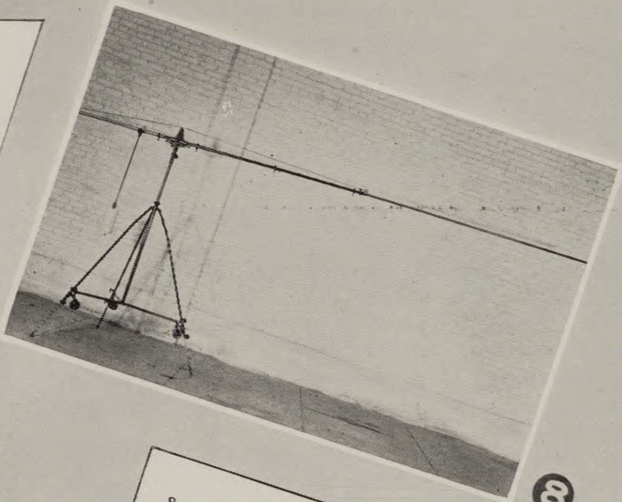

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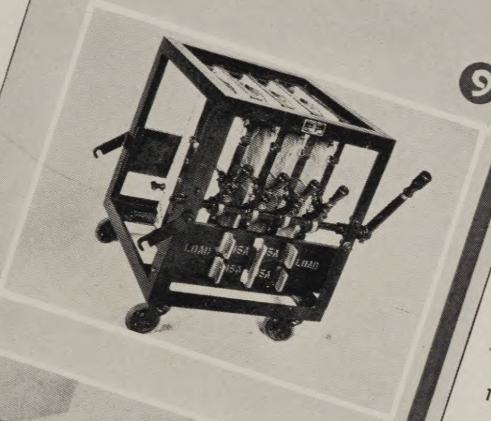

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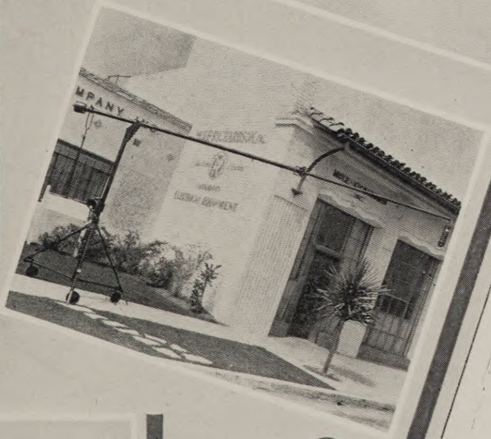
8. Mole-Richardson Type III Microphone Boom. This boom is designed particularly for more efficient use on location. It is much smaller and much lighter in weight than the regular studio Boom.

9. Mole-Richardson Dimmer Bank. This unit was designed for dimming circuits of large amperage for producing effects such as setting sun, fadeouts, etc. All units have both individual plate control or master control.

10. Mole-Richardson Microphone Boom for studio use. This instrument greatly simplifies the taking of sound on large sets, eliminating the necessity of placing a plurality of microphones.

11. Factory view in the Mole-Richardson plant. Machine shop where all parts are ground and fashioned from raw material.

12. Mole-Richardson Bowl Lamp. This light was designed particularly to general light large sets. The Bowl Lamp is very popular with comedy producers, as they require a high intensity general illumination.



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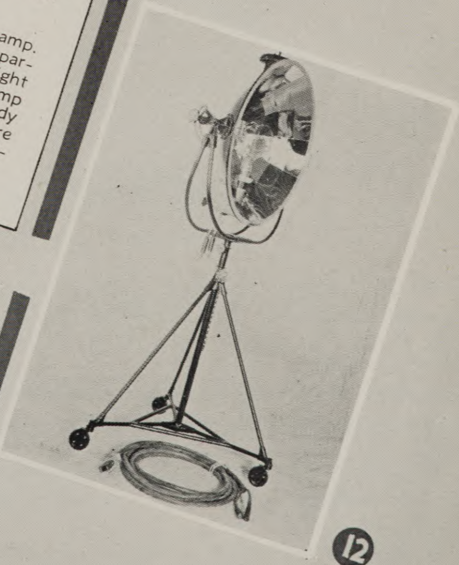

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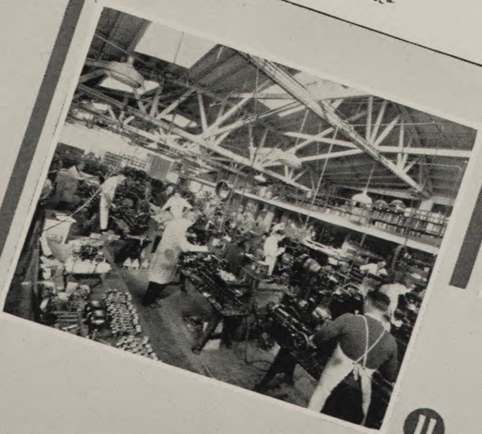

11

Screen Definition

(Continued from Page 9)

Interposition of a glass plate between object and lens

1. Makes focusing or re-focusing imperative after glass plate is in fixed position,
2. Glass plate should be placed at right angles to optical axis of lens system,
3. Glass plate should be as close as possible to lens system,
4. Glass plate should be as thin as possible,
5. Refractive index of glass plate material should be as low as possible,
6. Realization of the fact that normal depth of focus is decreased by glass plate, and
7. That these adverse influences are more pronounced for "close ups" than for "distance shots."

These optical facts are, as previously stated, characteristic of filters as well as diffusion discs and, but of less importance, for blimp glass plates.

The practical realization of these facts by the experienced cameraman make him prefer a thin gelatine filter to a thick glass one (leaving permanency of filter value out of consideration) and make him place a diffusion disc as close as possible to the lens.

If the ambitious cameraman mentally absorbs these facts, he will, by judicious observation of them in practical camera operation, find that he can materially improve the pictorial and especially definition results of his "takes."

Having disposed so far of the optical influences of a glass plate as a filter carrier within the unavoidable limits of this article, the chromatic influence of filter means in general upon definition becomes of importance.

Before starting the analysis of this most important and least understood influence, it might be mentioned that there seems sometimes to exist the opinion that the use of a filter adds its specific color value to the object light, whereas, in fact, it more or less restricts the actinic value of the object light to its specific color value and diminishes the spectrum values outside of its own sphere and that it **always** decreases the speed of the lens.

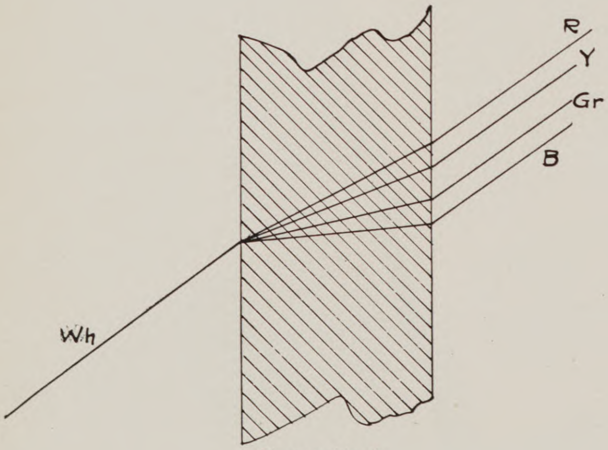

Diagram No. 2

The proper use of color filters in motion picture photography covers two very important fields.

Firstly, the proper selection and use of color filters is a powerful means to control not only definition but also exposure results for **different** parts of the object field for a **single** exposure, and

Secondly, that the proper selection and use of color filters enables the cameraman not only, as is well known and practised, to produce interesting and even startling trick effects, but what is more important, to produce natural effects of surprisingly nature-true characteristics under actual perspective and illumination characteristics of an entirely different composition.

This absorbingly interesting phase of filter use shall be analyzed in Part IV of this series of articles, but a well-balanced series of filters for above mentioned purposes as scientifically developed and practically used by Milton Moore since 1924 is herein given for preliminary study by the reader.

Although this series of filters has been developed and used to the number of twenty, only six of the most important of them are herewith given in an order of decreasing density. They consist of combinations of two Wratten filter numbers each:

1. No. 64 and 27.
2. No. 64 and 23.
3. No. 23a and B58.
4. No. E22 and B58.
5. No. 23 and B57.
6. No. E22 and B57 (A3).

The practical results of their use will be shown in Part IV by comparative test photographs.

●

Dropping of Multicolor Denied by J. C. Woolf

RUMORS that Multicolor would be abandoned in favor of black and white or abandoned in its entirety are vigorously denied in a statement issued by J. C. Woolf, who is in charge of sales promotion.

"Multicolor is proceeding as fast as is consistent with good business and first class mechanical methods, and will within the space of a few days be in its new home," Woolf stated.

●

Movies Made on Glass with German Invention

BERLIN—George Greenbaum, German inventor, has developed a device enabling a scene lasting about one minute to be photographed on a 2¼ by 3½ inch dry plate. With the aid of a special projector the picture can be thrown on the screen.

The plate is divided into a large number of small parts, which are exposed one by one in the same way as the sections of a strip of moving picture film. Pictures follow one another in a series of horizontal rows.

●

Strenge Heads Local 644

THE FOLLOWING officers were elected by Local 644, International Photographers, New York City, for the coming year:

President, Walter Strenge; first vice president, Ulyate K. Whipple; second vice president, Harry Harde; third vice president, Willard Vander Verr; treasurer, Frank Kirby; secretary, Walter A. Lang; sergeant-at-arms, Frank Landi; trustee for a three-year period, William Miller.

The new executive board is composed of the following members: George Folsey, William Steiner, Lawrence Williams, Charles Downs, Lester S. Lang, Ray Foster, George W. Peters, Joseph Seiden, Walter Scott, Herman Lutz, Hugo Johnson, Willard Vander Verr, Tom Hogan, Carl Larsen.

Francis E. Zeisse continues as business agent of the local, which has a registration of 250 members.

●

450 Service Engineers Now Maintained by ERPI

ELECTRICAL Research Products now has 450 service engineers in 220 localities throughout the U. S. to provide service for the 4,789 Western Electric sound systems in use at present. In New York there are 34 resident engineers, Chicago has 26, Los Angeles 18, Philadelphia 16, Boston 15 and Kansas City 10.

TO THE

Motion Picture Industry

WE EXTEND THE WISH THAT

1931

WILL BRING

Happiness and Prosperity

* * *

Max Factor Make-up Studios

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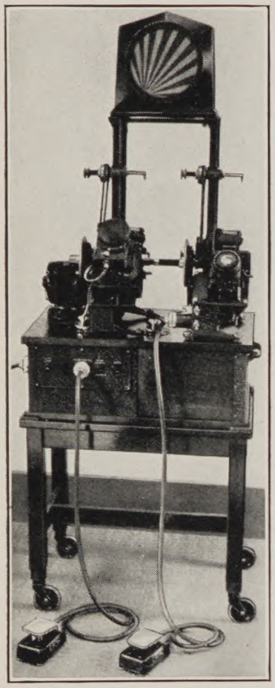
H-130, Vedado
Lima, Peru
Edificia Mineria

Johannesburg, So. Africa
Cor. Joubert & Kerk Sts.
Manila, Philippine Islands
No. 39 Escolta St.
Buenos Aires, Argentina
500 Sarmiento
Honolulu, T. H.
720 South St.

Max Factor's
Panchromatic
and
Technicolor
Make-up
for the
Screen

Max Factor's
Theatrical
Make-up
for the
Stage

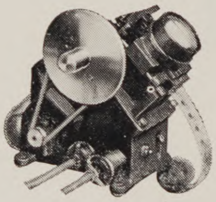
MOVIOLA



FILM VIEWING AND SOUND REPRODUCING MACHINES FOR USE WITH: SEPARATE PICTURE FILM AND SOUND FILM, COMPOSITE FILM AND SOUND ON DISC RECORD. FOR EDITING 35 MM. FILM, 16 MM. FILM, WIDE FILM.

●

Write for Circulars Describing the Different Models



MOVIOLA COMPANY

1451 GORDON STREET HOLLYWOOD, CALIFORNIA

New Portable Talker Set

ASSOCIATED Portable Sound Equipments, Ltd., London, has been registered with a capital of $55,000, to market a portable sound set, which, it is believed, will be the most inexpensive device of its kind. Actual manufacture of the set, intended primarily for use with advertising films, will begin soon.

Larger London Quarters for W. E.

WESTERN ELECTRIC'S sales branch, headed by T. P. Depew, assisted by C. W. Le Grand, has taken more spacious quarters on the Aldwych floor of the Bush House.

Two Bray Travel Units Going Out Next Year

J. R. BRAY will dispatch a crew in January to North Africa and the far East to get travel material for his Rambling Reporter Series distributed by Columbia. Another unit will be sent out by Bray next Spring to Italy and the Balkan States. The trips will cover about 10 months each.

Film Expedition to Brazil

AN EXPEDITION to obtain sound pictures of jungle life in Brazil is being organized by the University of Pennsylvania Museum and E. R. Fenimore Johnson, former vice president of the Victor Talking Machine Company.

The expedition will sail from New York for Montevideo about December 20, it is announced. Captain Vladimir Perfilieff, explorer and photographer, will head the company. The route will be up the Paraguay river to the Matto Grosso country. The party will return in a year.

Investment Film

THE BURTON HOLMES studios, Chicago, claims the distinction of being the first concern to produce an educational film dealing with the investment field. The picture, called "An Investment in American Prosperity," was given its first showing before a group of investment bankers at the Tavern Club.

In story form, the film relates the strength and scope of 28 of America's leading corporations. The importance of diversification in investment is emphasized.

Plans are being made to place the picture at the disposal of 800 investment houses and banking institutions throughout the country, which will arrange local guest showings.

General Electric Plans Studio in Schenectady

CONSTRUCTION of a studio at Schenectady is being contemplated by General Electric. Industrials and shorts will be made there. Preliminary matters were discussed at a recent dinner.

New S. M. P. E. Officers, Chicago

ELECTION of new officers of the Chicago section of the Society of Motion Picture Engineers has been announced. J. Elliott Jenkins is the newly elected Chairman; R. Fawn Mitchell is the Secretary and the Governors are Oscar B. Depue and Robert P. Burns.

Members of this Section now total 77.

A Happy and Prosperous New Year

IS EXTENDED TO OUR MANY FRIENDS OF THE MOTION PICTURE INDUSTRY . . . . .

COMPOSITE LABORATORIES

"Williams' Shots"

HAPPY NEW YEAR . .

Agfa Raw Film

C. KING CHARNEY

RCA, Auto Cinema Perfect Automatic Ad Projector

An automatic advertising projector that accommodates standard-size film has been perfected by RCA Photophone in association with Auto Cinema Corp., and will soon be put on the market, it is announced by Sydney E. Abel, general sales manager of Photophone. The machine, which will be leased by Auto Cinema and serviced by RCA Photophone, is compact, weighs less than 100 pounds and occupies less than two square feet of space. When placed in operation, the film is endless self-rewinding. Sound amplification can be controlled to any desired volume.

International Projector Announces New Turret

An improved design lens turret which will accommodate three lenses of either quarter or half size, is announced by the International Projector Corp. of New York. All focal length lenses of standard make may be readily used in connection with it.

Each lens is separately adjustable with relation to the projection aperture, this assuring perfect alignment and super imposition on the screen. The turret is readily moved around from one lens position to another by means of convenient trip levers.

the AUDIO-CAMEX

COMPLETE PORTABLE SOUND EQUIPMENT

•

Camera Silencing Cover

This Camera Cover will fit both Mitchell and Bell & Howell Cameras.

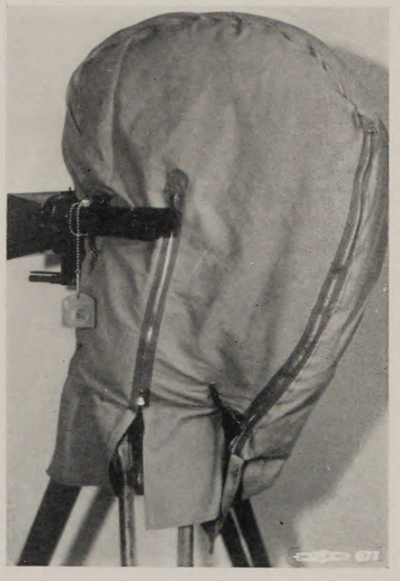
•

IT ENABLES THE CAMERAMAN TO WORK
WITH FINDER OUTSIDE THE "BLIMP"

•

This is the first time a Camera Cover has ever been offered to the Craft.

Price $50.00



Hollywood CAMERA EXCHANGE
CABLE: HOCAMEX-1511 CAHUENGA BLVD-PHONE HO 9431

Amateur Movie Making

by WILLIAM STULL, A. S. C.

THE WINTER months are perhaps the most critical ones in the entire year for the amateur cinematographer, for during these times of necessarily restricted photographic activity, he feels more and more frequently the urge to show his films to audiences. And, far too frequently, one such exhibition is enough to make the audience reluctant to attend another. Of course, people now-a-days are becoming increasingly skillful at these evasions, but when the mere suggestion of a home movie show brings forth a complete unanimity of headaches, previous engagements and sick friends, even the most rabid enthusiast can hardly fail to be a bit suspicious, especially when, as in most cases, these same evasive individuals are found surprisingly healthy, disengaged, and calloused to the ties of friendship when there is a good picture running at the local theatre.

Of course even the most enthusiastic amateur will admit that there is quite a difference between his own attempts at film presentation and those of the de Luxe show house. But he will generally fail to perceive that it is not a difference of materials, but one of methods. It is not merely the difference between the quality of films available to him and those available to the professional exhibitor. It is not the difference between silent films and talkies. It is not even the difference between a 4,000-seat "super-cinema" and an ordinary parlor.

It is solely a question of Showmanship.

Showmanship at Home

To the average amateur, Showmanship seems a thing as remote as the hinterlands of Timbuktu, and as far beyond his understanding as the Theory of Relativity. Of course, he may realize that it is a certain knack of quality which makes its possessors—like de Mille, "Roxy," or Sid Grauman—great figures in the entertainment world; but more than that, what is Showmanship to him?

But Showmanship is something which, if valuable to the professional impresario, is indispensable to the amateur. The greatest pleasure of amateur cinematography is the pleasure of showing films to other people, and Showmanship is the art of entertaining people.

Being an art, it can hardly be reduced to a set of formal rules or formulae; nevertheless, there are certain facts which, if kept in mind, and certain suggestions which, if followed, will form a key to the understanding of this art.

In the first place, no matter what you are doing, as long as you are working with an audience, the vital thing is to keep that audience entertained. Therefore, plan whatever you are doing with that one thought fixedly in your mind.

To keep the audience entertained, keep it interested. As long as a show (even a poor one), is moving along steadily, all is well; but let one hitch or interruption occur, and interest wavers; the spell is broken.

Next, take a tip from the professional: never give an audience too much of any one thing—no matter how good. Always let them be asking for just a little more, rather than complaining because you gave them too much. Never repeat if you can help it; if you can't, repeat but once.

Lastly, in planning a programme, plan it for your audience—not for yourself.

Now, how are these principles to be applied to the home movie show? For in the home presentation, we are naturally limited in every respect. How can we rise above these inevitable limitations and give our friends a really interesting, entertaining show?

Programme-Building

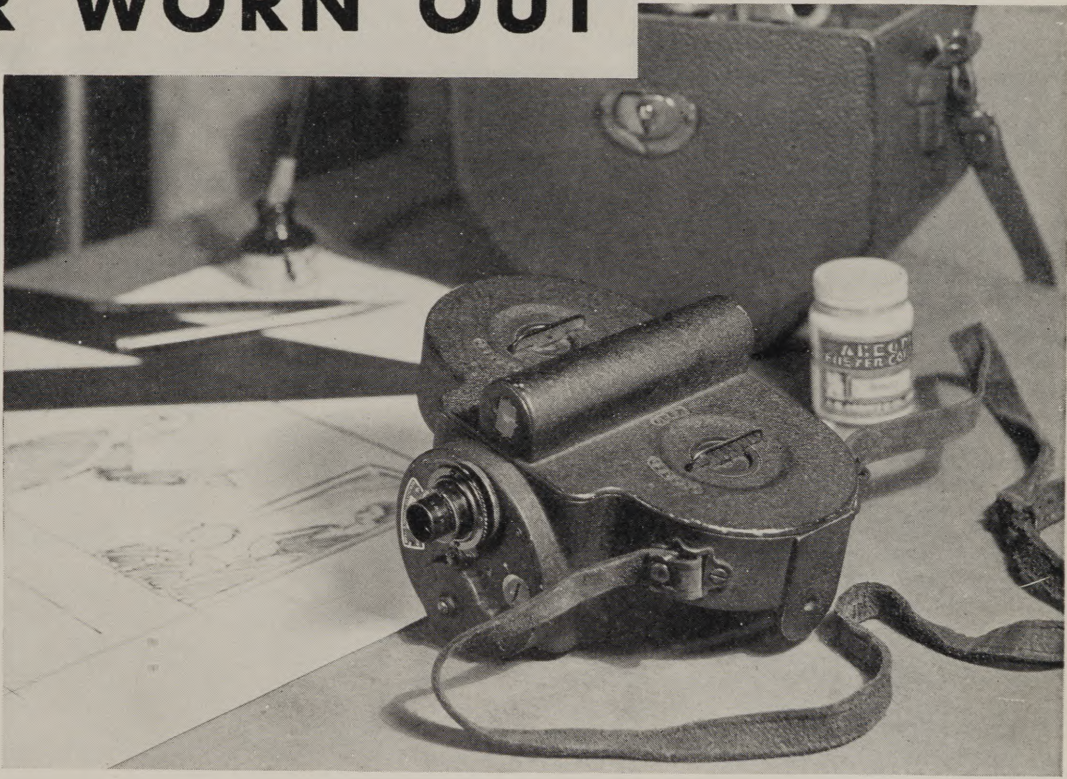
First of all, we must have an entertaining programme with which to work. More than that, it must be entertainment that is suited to the audience in question. Obviously, a programme which will please an audience of children will not be likely to satisfy an audience of adults. Similarly, among adult audiences, there is a wide divergence of taste. It is to be noted that among the more recent professional film successes have been such entirely different sorts of entertainment as "Disraeli" and "The Life of the Party." Obviously, each of these films has given pleasure to its audiences, but each has appealed fundamentally to a different group. Therefore, in planning your own programmes, take care that you do not offer a "Disraeli" audience a "Life of the Party" programme—or vice versa!

The professional impresario works under a considerable disadvantage in that he cannot choose his audience, and must of necessity give his programme sufficient variety so that he is reasonably sure of finding something that will appeal to the highbrow, lowbrow, and mezzobrow contingents, as well as the inevitably large group of children and morons, who combine to bring him his bread and cheese. The amateur, on the other hand, can generally choose his audience, and then suit his programme to it. None the less, the principle of variety as practiced by the professional showman should to some extent be adopted by the amateur programme-builder.

In the first place, with the many excellent 16mm. film rental libraries now operating, no programme should confine itself exclusively to the product of the individual camerist. One may have quite enough film which is technically acceptable, to make a full evening's show, but there is all too frequently too little variety in such a programme. The film may be technically satisfactory, and even of a fair variety of subjects, but, in ninety-nine cases out of a hundred, there will be at least such a sameness of treatment about it all as to make it a very drab and uninteresting programme. Therefore, the best plan is to make up a well-balanced programme in the professional manner. Now, the best professional programmes usually consist of a newsreel, a scenic or novelty, a comedy, and a feature production. With the single exception of the newsreel, each of these classifications is represented in the catalogue of every rental library. Therefore, such programmes can easily be made up of rented films, with one's own productions taking their logical places, as dictated by their particular **genre.** The average amateur production, however, should almost always fall under one of the first three categories; the feature "spot" should be filled by an amateur film only when it is of indubitable technical excellence **and** outstanding entertainment value. As a rule, however, the feature should be a professional dramatic film, of real worth. In their proper position on the programme, however, individual films have no equal, for they have—or should have—a personal interest which no purchased or hired film-subject could have. But such amateur films must be, in every sense, finished products. They must be well edited and titled, with no flaws such as bad frames or missing scenes. They must, in a word,

(Continued on Page 32)

NO FILMO HAS EVER WORN OUT



Mr. John T. McCutcheon's Filmo, purchased more than six years ago, has accompanied its famous owner on scores of jaunts into the dim and unknown places of the earth. The excellence of Mr. McCutcheon's movies reflects the constant dependability of the Filmo that made them . . . a Filmo that is working as perfectly today as the day it was made.

Like the finest watches, the finest of motor cars, Filmo's value is appraised by what it will do and how long it will continue to do it. To say that no Filmo has ever worn out is the conclusive answer to the question of its performance, its stamina. That is why Filmo Personal Movie Cameras and Projectors are the first choice of discerning movie makers the world over.

You would expect no one to make a better movie camera than Bell & Howell, manufacturers for nearly a quarter of a century of professional studio cameras for the major film producers of the world. Filmo unquestionably fulfills this expectation, from the moderately priced Filmo 75 at $92 and up, to the versatile Filmo 70-D at $245 and up. Ask your dealer for a demonstration, or write for Booklet No. 35—it's full of fascinating information. Bell & Howell Co., 1848 Larchmont Avenue, Chicago, Illinois. New York, Hollywood, London (B. & H. Co., Ltd.).
Established 1907

BELL & HOWELL FILMO
PERSONAL MOVIE CAMERAS AND PROJECTORS

Amateur Movie Making

(Continued from Page 30)

be able to stand upon their own feet as screen entertainment, with no need of apologies or explanations from the maker.

Presentation—or Projection?

Once a programme has been chosen, it must be shown to its audience. But, how is it to be shown? Is it to be merely a matter of putting the projector on a table, and the screen on another, and "running off some films," or is there to be some attempt at presentation? Is the show to be a pleasure, or an ordeal?

The answer to this rests solely with you. To answer it fairly, you must put yourself in the place of your guests.

You, personally, are an enthusiast and a technician.

They are neither.

You understand the mechanical factors in film making and projection.

They do not.

You can overlook mechanical imperfections in both the film and its presentation.

They cannot.

You can judge a programme by all of the many factors, from camera to screen, which enter into its creation.

They can judge only by the results they see on the screen.

Therefore, since results are all that count with audience, either give them first-class results, or don't try to give them anything. There is no room for half-way measures.

In securing such results, the first thing is to be completely prepared for every possible emergency. Have every detail of your performance carefully planned and well rehearsed, so that there can be no hitch during the actual showing.

Make the mechanical features of your programme as unobtrusive as possible. Of course, a motion picture performance is inescapably of a mechanical nature, but it need not be made too obviously so. Conceal as much of the mechanics of the performance from your audience as you can. If it is at all possible, have the projector placed so that it is out of sight, and if possible, more or less out of ear-shot, as the clatter of a projection-machine is by no means a pleasant accompaniment. If you can arrange things so that the audience and screen are in one room, with the projector in another, you will have a very good arrangement. If your rooms do not allow this, another excellent method is back-projection: projecting the picture onto the rear of a translucent screen. This will, of course, necessitate re-spooling your films, in order that the action and titles may not be reversed. Another method of rear-projection, which does not involve re-spooled film, is arranging the projector and screen at right angles to each other, and projecting with the aid of a good, clear mirror. By this method, you may seat your audience in a room, and place your projector in an adjacent hallway, quite out of sight.

Of course, however, the ideal method of home-movie presentation is in a room exclusively devoted to such service, and which may be a real home theatre. In such a room, you can give your artistic inclinations full play, placing your screen permanently, with artistic stage-settings and curtains in front of it. You can then have all sorts of footlight-and-floodlight arrangements, with which you can duplicate the lighting effects used in professional theatre practice. In such an installation, too, you can have everything—curtains, footlights, house lights, etc.—controlled from a bank of switches and dimmers near your projector, or your booth, if you have one. With such an equipment, you have everything at hand for the presentation of de luxe home movie shows. Of course, unless you are decidedly richer than most of us, you will still be limited to a single projector, which will still necessitate the unpleasant pauses between reels. However, these can be bridged over very nicely by a number of means; closing the curtains, and projecting upon them various patterned light-effects, and so on. But several other methods are available: the main thing being to keep the audience entertained during these necessary pauses. One friend of mine, for instance, has a small lantern-slide projector, with which projects onto the screen a series of slides with cleverly illustrated, witty, and somewhat racy jokes.

Show It With Music!

But perhaps the greatest aid to the de luxe film presentation is a musical accompaniment. Professional theatre-managers long ago learned this, and, until the advent of the Vitaphone, supported large symphony orchestras, expert organists, and highly-paid thematic-score-writers, all for the purpose of being able to give to each scene of each picture exactly the best and most fitting musical background. Naturally, this is beyond the amateur; but, if he has in his family a really accomplished instrumentalist, with a large and diverse repertoire, he may call upon this obliging relative to serve as an orchestra. But, as most of us do not boast such talented relations, there is, fortunately, an even better substitute in the phonograph.

The modern electrically-reproducing phonograph, with a proper selection of well-chosen records, will give the amateur showhouse the equivalent of the best orchestras and organs in the world. Furthermore, the orchestra can be operated by the projectionist, which is another important advantage for the amateur. But what sort of equipment is the best for the amateur?

First of all, the average "Automatic" phonograph is entirely useless for this purpose. In the first place, its cost is far greater than the need warrants. In the second place, it plays its selection of records straight through, playing the complete records from start to finish, whereas, for your purpose, you may want to start in the middle of a record, and only play a few bars, before repeating, or changing to another record. Therefore the "Automatic" machine is hardly suitable.

The ordinary electric-reproducing phonograph, Victor, Columbia, Brunswick, Majestic, Philco, or what have you, is however quite well adapted to this service. However, it has the same drawback that a single projector has: the pauses while you change the records. And these pauses may become quite annoying, as they will occur more frequently than the changes of film, for you will seldom play a record through, but merely use a certain theme in it.

Therefore, by all means the best reproducing outfit is one that contains two electrical pickups, two turntables, and a "Fader," for making musical lap-dissolves from one selection to another. Such an outfit can easily enough be assembled from such standard parts as a pair of "Columbia" or "Rotrola" portable turntable-and-pickup combinations, with the amplification and reproduction through any good radio and dynamic-cone speaker. The combination of these two units with one of the various efficient "midget" radios now so popular would make a very excellent sound installation at a cost approximating $100. However, this price might easily be bettered, by using all, or parts of some of the non-synchronous outfits which so many of the smaller theatres installed in the earlier days of sound-pictures, and which they have since been forced to discard. The turntable part of such outfits are particularly handy for this use, as they were designed expressly for the same sort of work in theatres. Probably the most important feature is that the pick-up arms are generally connected to pointers working over graduated scales, by means of which the needle can be accurately set down at any predetermined point. Any sort of amplifying apparatus may be used with these twin-turntable outfits, but it must be remembered that the better the amplifier and speaker, the better will be the sound.

But whatever means of reproduction is used, the selection of records is the vital thing. This selection need not be large, but it should be sufficiently comprehensive to have appropriate music for every important type of scene. You may, if you wish, have your accompanying music exclusively of organ recordings, or of orchestral ones, or of both. Both orchestras and organs were used for accompanying silent pictures, and, where the music was properly chosen and executed, the change from orchestra to organ, or vice versa, was practically imperceptible. The truly important thing, however, is to have the right records, and to be so familiar with the picture that you can use the appropriate music for each scene. This involves some considerable rehearsal of film and records, but it is well worth it. It is a good plan, too, to make out a "cue sheet" for each reel on your programme, stating the selection, the part of the record, and the screen cue for each change. With this, and a little practice with the fader, you will have no trouble in duplicating the effects of the finest symphonic accompaniments of the greatest super-theatres.

Naturally, the selection of the appropriate records is a somewhat difficult task. However, it is lightened by the fact that each scene or sequence in a feature film will fall more or less closely under some arbitrary classification as to mood, and thus, by having music to suit every mood, you will be quite reasonably sure of having music to fit every situation. This implies a moderately large library of recordings, but if you make your purchases discreetly and consistently—say one or two discs a week—a good collection can be built up rapidly and with the minimum strain upon the pocketbook.

The best scoring library, of course, is the one which is large enough to afford the user a considerable variety of selections for each type of scene, and one which is large enough as well to avoid the use of the more obvious musical themes. But such a library is, of course, considerably beyond the means of most of us, so we must content ourselves with one which, if not so comprehensive, is yet sufficient to provide for every mood, and give some variety. But the delightful thing about such a library is that it is in itself, quite apart from its utility in cinema presentation, something very much worth having. And of course such a library may be enlarged to any degree, as the means and the interest warrant. Here, however, is an outline suggesting a nucleus for a very effective scoring library, listed under the moods to which each is appropriate.

BATTLES, RIOTS, EXCITEMENT—

"Ruy Blas Overture" (Mendelssohn)—B. B. C. Orchestra—Columbia 50119D.

"Ride of the Valkyries" (Wagner)—Coates & Symphony Orchestra—Victor 9163.

"Flying Dutchman Overture" (Wagner)—Berlin State Opera Orchestra—Victor 9275.

"Egmont Overture" (Beethoven)—Victor Symphony Orchestra—Victor 35790.

BALLET

"Dance of the Hours"—Ponchielli—Victor Symphony Orchestra—Victor 35833.

"Faust Ballet Music"—(Gounod)—Royal Opera Orchestra, Covent Garden—His Master's Voice (English Victor) C1462 and 3.

"Scarf Dance" (Chaminade)—Columbia Symphony Orchestra—Columbia 1658D.

"Fantasy from Coppelia Ballet"—Delibes—Dr. Weissmann and the Grand Symphony Orchestra, Berlin—Odeon 5162.

CARNIVAL, JOY, ETC.

"Merry Wives of Windsor, Overture" (Nicolai)—Victor Symphony Orchestra—Victor 35764.

"Carneval Overture" (Dvorak)—Hollywood Bowl Orchestra—Victor 6868.

"Bank Holiday" from the "Cockney Suite" (Ketelbey)—Albert W. Ketelbey and his Concert Orchestra—British Columbia—9862.

CHINESE

"In a Chinese Temple Garden"—(Ketelbey)—Albert W. Ketelby and his Concert Orchestra—British Columbia 9859.

"A Japanese Sunset"—(Jessie L. Deppen)—Victor Salon Orchestra—Victor 20998.

"Chinese Lullaby"—(Bowers)—Victor Salon Orchestra—Victor 21970.

DEATH SCENES, ETC.

"Largo" from "New World Symphony" (Dvorak)—Philadelphia Symphony Orchestra—Victor Album M-1.

"Chanson Triste" (Tschaikowsky)—String Bass Solo by Serge Koussevitski—Victor 7159.

"Death of Ase" from Peer Gynt Suite (Greig)—Victor Symphony Orchestra—Victor 35793.

"Unfinished Symphony" (Schubert)—Philadelphia Symphony

DRAMATIC SCENES, ETC.

Orchestra—Victor Album M16.

"Les Preludes" (Liszt) San Francisco Symphony Orchestra—Victor 6863 and 4.

"Traviata Fantasy"—(Verdi)—Marck Weber and his Orchestra—Victor V-50015.

FIRES, GALES, ETC.

Much as for BATTLE SCENES;

"Fire Music from Siegfried" (Wagner)—Beyreuth Festival Orchestra—Columbia 67372D.

GALLOPS, RACING, BUSTLE, ETC.

"Orpheus in Hades" (Offenbach)—Victor Symphony Orchestra—Victor 35881.

"Light Cavalry Overture" (von Suppe) Victor Symphony Orchestra—Victor 21251.

"Zampa Overture" (Herold)—Continental Symphony Orchestra—Victor V-50006.

ITALIAN, SPANISH, SCOTCH, IRISH, ETC.

These selections are all obvious, and hardly need to be listed here.

LOVE SCENES

These scenes require music which is predominantly by the string section of the orchestra, or violin or 'cello solos.

"Simple Aveu" (Thome)—Cello solo by Alfred Wallenstein—Victor 20104.

"Narcissus" (Nevin)—Victor Concert Orchestra—Victor 21449.

"A Little Love, A Little Kiss"—(Ross-Sileseu)—Victor Salon Orchestra—Victor 20279.

"When You and I Were Seventeen" (Kahn-Rosoff)—Victor Salon Orchestra—Victor 19702.

"Londonderry Air" (Traditional) Organ solo by Reginald Goss-Custard, F. R. C. O.—H. M. V. B2375.

"Serenata" (Tosselli) deGroot and the Piccadili Orchestra—H. M. V. B2086.

ORIENTAL, EASTERN, ETC.

"Ballet Egyptian" (Luigini)—Concert Orchestra—Victor 35794 and 5; Movie Organ Solo by Quentin MacLean—Columbia 1365 and 7 D.

"Indian Love Lyrics" (Woodforde-Finden) deGroot's Piccadilly Orchestra—H. M. V. C1257 and B2237.

"Indian Love Lyrics" (Woodforde-Finden) Movie Organ, G. T. Pattman—British Columbia 9417.

"Casse Noisette Suite" (Tschaikowsky): "Danse Arabe"—British Broadcasting Company's Wireless Symphony Orchestra—Columbia 50106D.

"Egyptian Suite—African Motives" (Bardi)—Dajos Bela and his Orchestra—Odeon 3256.

"In a Persian Market" (Ketelbey)—International Concert Orchestra—Victor 35fff.

NATURE; RUSTIC SCENES; SCENIC FILMS

"Summer Days Suite" (Coates) Coates and Orchestra—British Columbia 9369-9370.

"Peer Gynt Suite: Morning" (Greig)—Victor Recording Orchestra—Victor 35793.

"Shepherd's Hey" (Grainger) Victor Concert Orchestra—Victor 20802.

"Siegfried: Forest Murmurs" (Wagner) Philharmonic-Symphony Orchestra of New York—Victor 7192.

(Continued on Page 36)

About Lenses

Part 3

The Apertures of Lenses

[First installment appeared in October issue.]

LENSES differ in the amount of light they admit, and this is very important, because the more light admitted, the shorter the exposure can be. The chief object in using a lens instead of a pinhole is to transmit more light to the film, and the amount of light that is transmitted depends upon the area of the glass in the lens.

Suppose we place a piece of cardboard, instead of a film, in the back of a camera, and have a pinhole in the card through which we can look at the lens; then point the lens toward a window; the amount of light that reaches the eye through the hole in the card depends upon how much of the light from the window is passing through the lens; that is to say, it will depend on the area of the window which we could see if there was no glass in the lens. Since the visible area of the window is bounded by the edges of the lens mount, we could see more if the lens were of shorter focal length so that the eye would be closer to it. With a lens of long focal length only a small part of the window area is visible as in Fig. 15.

With a lens of half the focal length, but of the same diameter as that shown in Fig. 15, four times as much of the window area is visible, see Fig. 16.

This shows that the brightness of the image projected by lenses of the same diameter varies inversely as the square of the focal length of the lens. It also varies as the area of the lens surface (aperture) which admits the light. The greater the lens aperture the more light it admits. The area of the lens aperture, of course, is proportional to the square of its diameter, so that all lenses in which the diameter of the aperture bears the same ratio to the focal length will give equally bright images. This means that the brightness of the image is determined not solely by the focal length, nor solely by the diameter of the lens aperture, but by the **relation** that exists between the lens aperture and the focal length of the lens, so that all lenses in which the diameter of the opening is, say, one-sixth of the focal length, will give equally bright images. Thus, in a lens of one-inch aperture and a focal length of six inches, the opening is one-sixth of the focal length, and in a lens of twelve inches focal length and two inches aperture, the opening is likewise one-sixth of the focal length. Both lenses are of the same f. value. This means that both give an image of the same brightness, and will require the same exposure. Lens "apertures" are, therefore, rated according to the ratio between their diameters and their focal lengths; thus, one in which the opening is one-sixth of the focal length is marked f.6; one in which the opening is one-eighth, f.8, and so on, and the larger the aperture, the more light the lens transmits, and the more light it transmits the shorter the exposure needed.

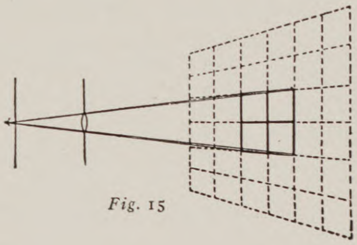


Fig. 15

But even when we have a lens with a large aperture we shall have to regard this as a reserve power for use in special circumstances, and we should not by any means use it at its largest aperture all the time.

Depth of Focus

From the construction of a lens it follows that only the rays from a mathematical point can come together in a point again, and that the rays from any point nearer or farther than the point focused cannot meet in a point image on the film, but must produce a small disc of light instead of a sharp point of light.

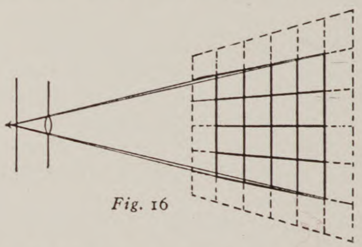


Fig. 16

The disc is termed the "circle of confusion." If the circle of confusion is small enough we shall not be able to distinguish it from a point, and the picture will appear to be sharp.

With what are known as "fixed focus" cameras such as the Model B Vest Pocket Kodak and the box Brownies, no attempt is made to secure a wholly sharp focus for objects at all distances, but the lenses are sharply focused on the nearest point to the camera which will enable distant objects to appear approximately sharp in the pictures, and in this way objects in the middle distance are perfectly sharp, and near objects are also sharp provided they are not too near.

The following table of these distances, beyond which everything is sharp when the largest stop is used, may be useful:

Vest Pocket Kodak (Model B)	7½ feet
No. 0 Brownie	7½ feet
No. 2 Brownie	11 feet
Nos. 2A, 2C and 3 Brownies	13 feet

If we are using a No. 2 Brownie, for instance, as long as everything is farther off than eleven (11) feet we can rely on getting a picture with everything focused sharply.

With the focusing Kodaks we must judge the distance of the object on which we wish the focus to be sharpest and set the scale to that; then we shall find that objects somewhat nearer, and also objects a good deal farther from the camera are also sharp, and the distance from the nearest to the farthest objects that appear sharp in the negative is called the "depth of focus." This depth of focus depends on the focal length of the lens and on the size of stop used in the lens; the greater the focal length the less the depth of focus, and the **bigger the stop the less the depth of focus.** Thus in Fig. 17, we have

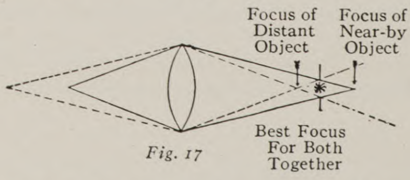


Fig. 17

a lens focusing near and far points at full aperture and producing large circles of confusion. In Fig. 18 a smaller stop is used in the same lens, and the circles diminish in size in proportion to reduction in the size of the stop.

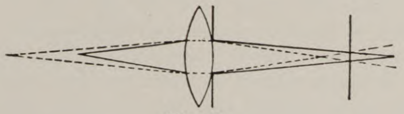


Fig. 18

Sometimes we have to focus near objects at the same time as distant ones, so that it is necessary to "stop the lens down" to some extent.

Stops are marked on two different systems, though both are based on the fundamental ratio of the diameter to the focal length of the lens. In the one system the stop is expressed simply as a fraction of the focal length; thus F./8 (commonly written f.8) means that the aperture is one-eighth of the focal length of the lens; f.16, one-sixteenth, and so on. The rectilinear lenses that are fitted to some of the Hawk-Eye cameras are marked in the "Uniform System" (U.S.) in which the numbers are proportional to the expose required, f.4 being taken as unity, so that the scale is as follows:

F.	f.4	f.4.5	f.5.6	f.6.3	f.8	f.11	f.16	f.22	f.32	f.45
U.S.	1	1.26	2	2½	4	8	16	32	64	128

This table also shows the relative exposure that is required with the f. system stops, the exposure varying as the square of the f. value, so that f.11 requires twice the exposure of f.8; f.16 twice that of f.11 and so on.

In the case of the larger stops, f.6.3 requires about twice the exposure of f.4.5; and f.8 twice that of f.5.6.

●

Bobby Jones "Filmoed" by Prince of Wales

THE PRINCE OF WALES is an enthusiast on the subject of taking golf movies, according to Golfdom magazine, and used his own personal Filmo movie camera to take pictures of Bobby Jones when the latter was playing in Britain last summer.

The Prince is also greatly interested in the project which the Professional Golfers Association of America has been carrying through of making super-slow golf demonstration movies of such stars as Jones, Vardon and Wethered.

After he learned of the taking of some of these movies in England he requested that a complete set be sent to him at the earliest possible moment. This was done by George Sargent, a director of the Association, who was abroad for some time in connection with making the Vardon and Wethered golf pictures. At the same time Mr. Sargent transmitted to His Royal Highness an invitation to attend the Ryder Cup international Professional Matches at Scioto Country Club, Columbus, Ohio, next summer.

●

Trespassers Will Be Prosecuted

HOW OFTEN has the above notice prevented the capture of a beautiful or interesting photographic subject! Just remember that a telephoto lens will make the "No Trespassing" sign something that will be of no inconvenience to you. And, too, that interesting shot you want may be prevented because of a police cordon or a crowd. A telephoto lens will save it for you.

Cine-Kodak in Arctic

Here we see Dr. Knud Rasmussen, explorer, with his Cine-Kodak at Thule, Greenland.

Paramount's New Color Process Out of Lab Stage

PARAMOUNT'S new color process, details of which have been guarded closely over a two-year period, is understood to be ready for studio use. The method is said to use a new type color-cap over a regular camera lens.

●

Wilcox Boosted

HERBERT M. WILCOX has been elected vice president in charge of operating of Erpi.

The new vice president has been operating manager in charge of installing and servicing Western Electric sound equipment. He has been associated with Western Electric since April, 1926, going in as operating manager of Erpi when the latter company was formed in January, 1927. Previous to that he was under Otterson for 11 years with the Winchester Repeating Arms Company.

●

College Adopts Talkers in Study

TALKING pictures have been inaugurated as a part of the regular work of the undergraduate body, by Hunter College. Two educational subjects were shown.

●

Talkers for Schools in England

EDUCATIONAL authorities, in co-operation with Western Electric and British Movietone News, are working out plans for daily 40-minute talker programs in Middlesex schools. First subjects will be principally "general knowledge" types.

Machinery or Art in Pictures

(Continued from Page 11)

Many of these pictures run to type, such as crook stories, wild party stories, college stories, and any number of others. Often they contain technical as well as artistic fallacies. Generally they just cover the surface of the type of life they depict. Often several pictures with the same star are extremely similar in plot.

College life, for instance, offers many story plots outside of football. Then, the idea of the hero planning to join a gang of crooks after some quarrel with his sweetheart, and then having her save him at the last minute before he has been given a real chance to go wrong, has been badly overdone. Lately, for some reason or other, there has been a fortunate succession of football stars being kept out of the game until the last few minutes, and then scoring the winning touchdown. Let us hope that when some more football stories appear, something different will occur.

The advance of color photography offers many opportunities to the film world. Unfortunately, color has not yet been perfected so as to leave out all streaks, or to include all colors, but color does not provide added artistry in spite of its shortcomings. But colors, like anything else, should be chosen with care. While they will probably add only to the pictorial effect, rather than the dramatic possibilities, the use of poor color combinations will detract from the centralized interest of the plot.

As time goes on color will be more and more in use. It will be especially valuable in outdoor photography, and in achieving effects which the black and white is unable to achieve. At present, however, it is still to be experimented with, and is expensive. But the time will no doubt come when the use of color will be as universal as the use of sound.

While the artistry of a motion picture depends mainly upon those connected with the acting and directing, there are hundreds of semi-mechanical processes entering into the question and contributing a great deal toward artistic achievement. Photography, sound-recording, projection, color recording, and numerous other technical processes are also necessary for the proper taking and showing of a picture. The work of these technicians receives little credit from the general public, and if their names be added to the list of credits shown at the beginning of a picture, the nature of their work is not known anyway. They are the stage hands of the motion picture industry.

But the chief responsibility for the motion picture as an art rests with the producers. As long as their primary interest is that of earning money, the brand of pictures will be anything but the best. It is useless to acquire theatres and have nothing worth showing in them.

American life has drifted too much toward making financial remuneration the reward of industry. In lines of work dull in themselves there is little wonder that such should be the accepted attitude. But a vocation itself should be of as much interest, or rather, of greater interest, than the money to be made—and this applies to every one from the president of a concern on down.

Greater interest in the creative side of motion picture work from the producers will inspire greater activity from the artists, whose interest in their work is liable to be high to begin with. But a succession of mechanical plots arranged only to satisfy expected box office receipts will mean more or less mechanical acting. Unwillingness to experiment, especially when the failure of the experiment may mean looking for a new position, is a natural reaction of the director to present conditions.

The motion picture industry must remember that somebody will have to break the trail. Waiting for a book or a play to make a name for itself before accepting it for motion pictures is the act of a parasite. Playing safe is all right to a certain extent, but there are limits.

The popularity of the talking picture as a talking picture has worn off. Something new, or preferably, something better, is now demanded. Quality is generally an even better attraction than novelty. Wide screens are making their appearance, but are, after all, merely a technical improvement.

Some machinery is necessary for carrying out anything, but the machine is only a method. It should not be of more importance than the work it is to do. Art is a matter of individualism, or careful study and preparation, and, in the motion picture, of cheerful cooperation. The motion picture production demands clearer thought and less impatience, more attention to major points, and less to minor technical details, greater attention to producing the worth-while pictures the public really does want, and less to production of the trash some morons believe the public wants.

●

Amateur Movie Making

(Continued from Page 33)

This list can, naturally, be extended almost without limits, as it covers a very broad variety of scenes, and may include many types of music.

PROCESSIONS; HISTORICAL

"Aida: Grand March" (Verdi) Creatore's Band—Victor 35780.

"Merchant of Venice: Doge's March" (Rosse)—Movie Organ Solo by Quentin MacLean—British Columbia 9586.

"Coronation March from The Prophet" (Meyerbeer) Mengelberg and the Philharmonic-Symphony Orchestra—Victor 7104.

"Cockney Suite: A State Procession" (Ketelbey)—Albert W. Ketelbey and his Concert Orchestra—British Columbia 9860.

RELIGIOUS; CHURCH SCENES

"Ave Maria" (Gounod) Charles O'Connell, Organ—Victor 21216.

"In a Monastery Garden" (Ketelbey)—Movie Organ, Reginald Foort—Victor 35821.

"Largo" (Handel)—Organ, Lew White—Brunswick 20083.

STORMS

"Flying Dutchman Overture" (Wagner) Berlin State Opera Orchestra—Victor 9275.

"Adagio from New World Symphony" (Dvorak) Philadelphia Symphony Orchestra in Victor Album M-1.

"The Storm" (Pattman) Movie Organ Solo by G. T. Pattman—Columbia 50252-D.

(Continued on Page 39)

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1931

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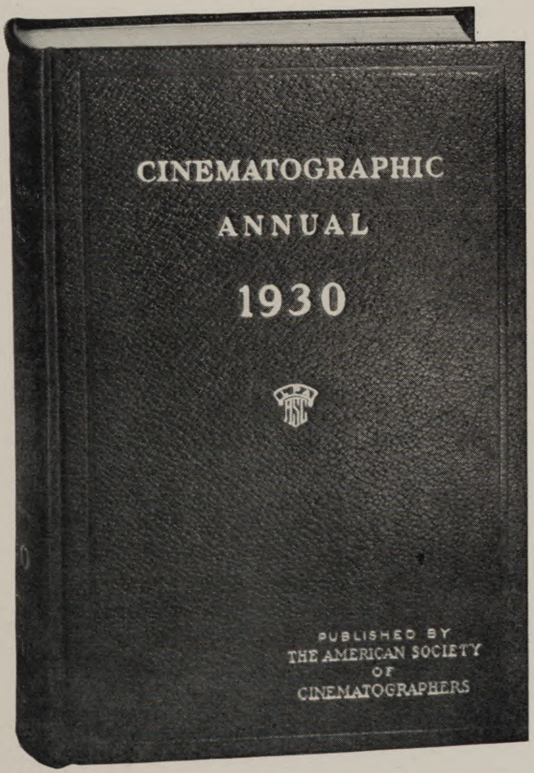

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Production Cost Up $46,000,000

Interesting Figures Revealed by Census Bureau

AN INCREASE of more than $46,000,000 in production costs from 1927 to 1929 is shown by figures gathered in the 1929 census of manufactures, made public yesterday by the Census Bureau. The total cost of work done by 143 establishments last year was $180,864,319, compared with $134,343,360 spent by 142 companies in 1927. Half of the increase was in theatrical films, of which 2,543 were produced last year at a cost of $118,692,733, against 1,347 costing $92,593,732 in 1927.

For the first time the bureau was able to segregate productions so as to show sound and silent pictures separately, the 1929 production including 344 negatives with sound, costing $34,186,010, 689 with dialogue, costing $67,719,427, and 1,510 silent, costing $16,787,296. Expenditures on unfinished productions last year totaled $17,888,180, compared with $13,267,338 in 1927.

News films are shown to have cost $2,923,286 last year, against $2,499,660 in 1927; advertising pictures, $3,367,160 against $617,466, and educational films $192,242 against $337,159.

Other items listed are: Laboratory work, positive films, $10,698,678 against $12,491,088, and receipts for lab work done for others, $21,116,060 against $11,921,655; value of other work done, $1,647,698 against $615,262; and receipts for use of studio facilities, $4,338,282, not reported separately in 1927.

The report shows the number of salaried officers and employes last year as 8,298, against 7,598 in 1927; the average number of wage earners, 10,785 against 8,415; salaries paid, $58,920,014 against $56,298,560, and wage payments, $24,722,053 against $18,637,005. The cost of materials, fuel and purchased electric current is given as $38,166,988, against $34,867,472, and payments for contract work, $9,437,452 against $15,476,548.

The figures cover only production and do not extend to distribution or theatre operation.

$18,000,000 PROGRAM AT UNIVERSAL

ANNOUNCING the largest budget in the history of Universal Pictures, Carl Laemmle, president, today revealed that $18,000,000 would be spent in film production during the 1931-32 season.

This is $3,000,000 more than the amount spent during the past season, which was the most active in the annals of the organization.

Quality pictures, rather than quantity, with especial emphasis on stories, will be the policy, Mr. Laemmle stated.

The definite number of pictures for 1931 has yet to be determined, according to Carl Laemmle, Jr., in charge of production, but it is contemplated that the program will contain a few more feature pictures than last years. The number of short reels and serials will remain the same.

The $18,000,000 budget does not include the amount that Universal will spend on stage plays for Broadway production.

Conferences are now being held on the pictures to be produced, and the first of the group will be announced shortly after the New Year, Mr. Laemmle, Jr., stated. More original screen stories will be sought, and a number of new personalities introduced.

Seventy Features Planned by Paramount for 1931-32

PARAMOUNT will have between 70 and 75 features on its 1931-32 program, Adolph Zukor told "The Film Daily" recently as he arrived at Grand Central Station from the Coast. This would mean an increase of from five to ten over 1930-31.

"Business is all right," he said, referring to his own organization.

●

10 U. S. Films Banned Last Year in India

A REPORT to the House of Commons, compiled by Wedgwood Benn, Secretary of State for India, revealed that 10 American subjects were prohibited from public exhibition in that country during the twelve months ended Sept. 30. Films barred were "Anarkali, or the Monument of Tears," "Charge of the Gauchos," "Drums of Love," "King of the Khyber Rifles," "The Letter," "The Red Dance," "Scarlet Lady," "Truth About Sex," and "The Very Idea."

●

55 Photophones in Australia

R-C-A PHOTOPHONE has just completed its 55th installation of sound equipment in Australia. The list includes 18 houses in the Hoyt circuit.

New Laboratory at Radio Pictures to Employ 500 Workers

HAVING purchased four lots just across from the studios, at Gower and Waring streets, Radio Pictures immediately will start work on million-dollar laboratory, which when completed, will give employment to at least 500 people. Several thousand artisans will be put to work constructing the buildings.

●

Theatre Wiring Increase in India

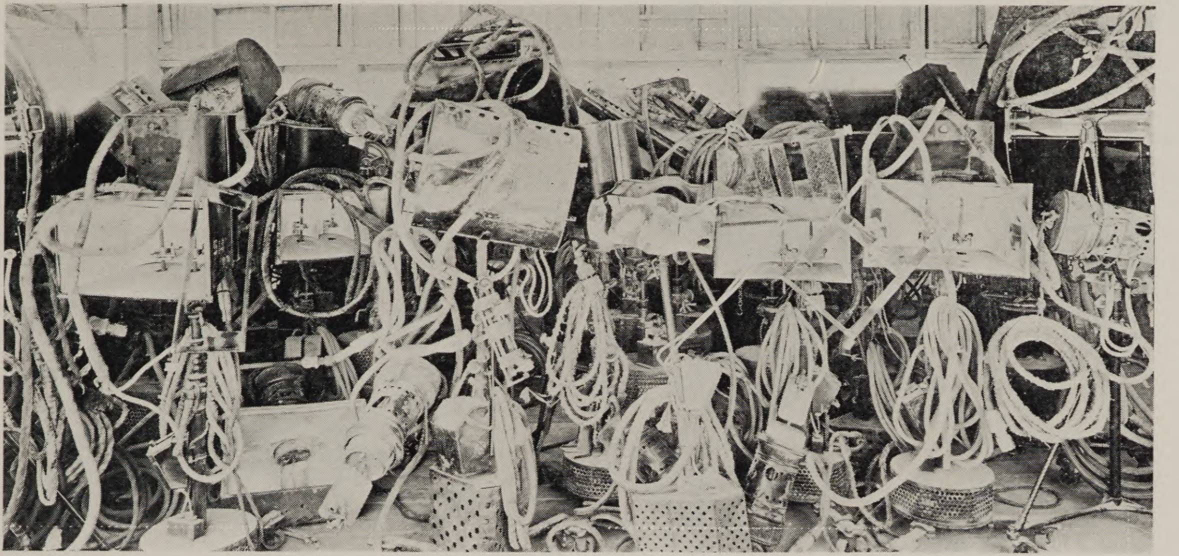
MADAN BROTHERS, the biggest cinema in India, have so far only wired their houses which cater for the European population. They have now decided that the time is ripe to install talking picture apparatus in their other theatres which cater for the native population. That this decision is correct is proved beyond doubt by the great success of the recently equipped Crown Cinema, Calcutta, which is a native theatre, and which has been packed to capacity at each performance ever since it opened.

●

Technician Mission

A SPECIAL mission of technicians has been commissioned by Gaumont of Paris to visit the principal film trade centers of the world. The mission is authorized to study the equipment of the ideal sound-film studio. It is expected to arrive in London at an early date.

Relegated to the Junk Pile



WHEN ALADDIN, some several thousand years ago, went crying through the streets, "New lamps for old," he was in search of that magic lamp that was able to produce anything that its bidder asked for. Heavily laden with all sorts and sizes of equipment that evidently would produce light, Aladdin, at great cost to himself, offered these lamps for the one type and design upon which he confidently could rely. It had produced everything that he had demanded.

Several thousand years later, today to be exact, scores of modern Aladdins in our most profitable motion picture institutions are gaining immediate response for efficiency and everything else that they demand from lamps that Aladdin would have coveted.

Aladdin's lamp evidently was silent in operation, a feature that would have pleased the producer of today—but that vital factor with the other merits of the Aladdin lamp, are to be found in modern Laco Lites.

We know that had Aladdin lived in this age of precision and performance, and had been engaged in the production of motion pictures he would not be forced to search for the one and only proven efficient lite. For Laco Lites, made in a number of sizes and designs to meet every studio requirement, are built with a precision that makes a battery of them work as one—and the sets of our studios are equipped with them—all there to do their magic bidding.

The lamps illustrated on this page are not three thousand years old, yet they represent a few of the many whose places have been taken by Laco incandescent equipment—yes they ARE silent now.

Amateur Movie Making

(Continued from Page 36)

TRAGIC SCENES

"Prelude in C Sharp Minor" (Rachmaninoff)—Victor Concert Orchestra—Victor 35951.

"Cockney Suite: Elegy ("Thoughts on Passing the Cenotaph") (Ketelbey)—Albert W. Ketelbey and His Orchestra—British Columbia 9861.

"New World Symphony" (Dvorak)—Philadelphia Symphony Orchestra—Victor Album M-1.

WEIRD, MYSTERIOUS

"Unfinished Symphony" (Schubert)—Philadelphia Symphony Orchestra—Victor Album M-16.

"Fantastic Symphony" (Berlioz) — London Symphony Orchestra—Columbia Album 34.

"Funeral March of a Marionette" (Gounod)—San Francisco Symphony Orchestra—Victor 6639.

In addition to these general classes, it may be remarked that some types of film-subject may be used with almost any sort of music: Comedies, for instance, go well with up-to-date dance-music, news-films with military marches, and so on. Scenic or travel films allow the use of many beautiful and interesting compositions which can seldom be used otherwise: however, as in every other department of cinematic endeavor, it must not be forgotten that the score must be but an auxiliary to the picture on the screen—not a show in itself. Used properly, it is one of the most effective aids to successful presentation; abused, it can quite as easily spoil the show. Therefore, if you would please your audience, in your scoring, as in all other branches of your presentation, let good taste reign.

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Extensive 1931 Schedule Planned by Fogwell, Ltd.

LONDON—Reginald Fogwell Productions, Ltd., has announced plans for an extensive increase in production activities for 1931. Having just completed "Madame Guillotine," the company early in January will star Percy Marmont in an adaptation of the Gilbert Frankau novel, "Martin Make Believe." In March, "Black Damp," a mining story, will be placed before the cameras. Other vehicles for the new schedule are being lined up and Madeleine Carroll, who was recently signed to a $50,000 contract, will be featured.

German Talkers in Prague

PRAGUE—After being barred since the demonstrations of last September, German pictures will again be shown in three Prague houses. Lack of suitable domestic material compelled the decision.

Austrian Production Revived

VIENNA—Talkers have brought about a revival of production in Austria. The first sound picture to be exported from here is now showing in Berlin and its success is credited to the inventor of the Selenophon sound recording system. The Selenophon studio is available to foreign companies desiring to produce in Austria.

Bank to Aid French Industry

PARIS—Banque de la Cinematographie Francaise, formerly known as the Union Cinematographique Francaise, plans to act as a central body for financing of film industry projects in this country.

W. M. Brown on British RCA Board

LONDON—W. M. Brown, general manager of the Gramophone Co. and a director of Associated Radio Pictures, British branch of R-K-O, has been appointed a member of the board of directors of R-C-A Photophone.

Filmo Topics

THE FOLLOWING is the list of contents for the January issue of "Filmo Topics," the very interesting and instructive monthly publication issued by the Bell & Howell Company. Copies will be mailed free if you send your request to the Bell & Howell Company, 1801 Larchmont Avenue, Chicago, Ill.:

FILMING EUROPE'S BEST SKI JUMPERS

Movie making on the famous Holmenkollen Hill during International Sports Week in Norway. By Fred H. Harris, Treasurer, National Ski Association of America.

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FROM CAPE TO CAIRO

A movie maker's journey with his Filmo 70-D over Rhodes' dream route. By J. W. Albright.

FILMO NEWS PICTORIAL

TITLING YOUR FILMS

No. 4 Trick Titles.

SNOW CINEMATOGRAPHY

How to capture winter's beauty with your Filmo. By E. Fawn Mitchell.

FILM CONTROL IN THE CHANNEL

Article No. 13 of the "Facts About Filmo" Series, explaining how film is accurately registered at the Filmo Projector's Aperture. By Joseph A. Dubray.

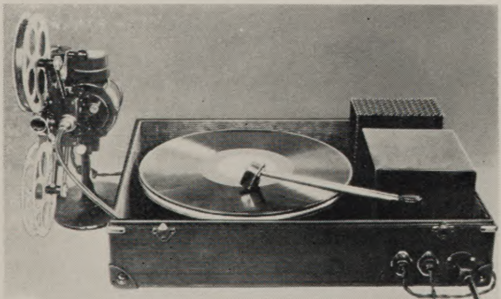
B. & H. Announce Talkie Reproducer with Microphone Feature

A SPECIAL microphone arrangement which will enable the operator to interject remarks relative to any picture which is being shown and to have his voice come from the loud speaker in entirely satisfactory volume, is hailed as a revolutionary feature of the new Bell & Howell portable 16 mm. talkie reproducer, the Filmophone.

This new combination is especially valuable for business, educational, church and small theatre use. It will also be warmly welcomed in the home.

The Filmophone itself is absolutely portable in the true sense of that word. It comes in two cases, of approximately equal size, shape and weight, totaling 88 pounds. It employs a Filmo Projector for showing pictures, using 16 mm. amateur size film. Sound is obtained by a synchronized phonograph type of disc, the same as used in theatres.

The Filmophone, it is stated, presents the ultimate in tonal qualities in portable sound movie reproducers. It produces volume sufficient for audiences of several thousand. With it perfect synchronization is achieved with greatest ease. It has a worm drive of unique design, thus eliminating the double motor feature and avoiding any possibility of slack in the mechanical coupling which would, of course, destroy synchronization. The Filmophone is a product of the Bell & Howell engineering laboratories and carries with it the Bell & Howell manufacturing guarantee.



The microphone feature permits the operator to plug in conveniently at any time, automatically cut out the musical or verbal record accompaniment and make any comments desired in order to emphasize points of a film which may need any comments desired in order to emphasize points of a film which may need stressing to meet a specific situation. When a switch on the microphone is released the record sound accompaniment is resumed.

A notable advantage of this microphone arrangement lies in the fact that it will obviously make it possible to use many silent pictures to good advantage. A salesman, for instance, can talk into the microphone while showing a silent film and explain his company's product and have his voice accompany the picture in a volume equal to that of the Filmophone when it is presenting a sound picture, so that a large audience can hear him easily. The Filmophone will be marketed with the microphone attachment or it may be secured without the microphone feature which can then be added later.

One of the two cases which house the Filmophone contains turn table with flexible shaft connection to the Filmo Projector, magnetic pickup, amplifier with power pack, tubes, needles, needle cup, pocket for three 16 inch records, and necessary accessories. The second case houses the loud speaker permanently mounted in the case itself, together with the Projector, three extra reels of film, empty reel, connecting cords, cables and accessories.

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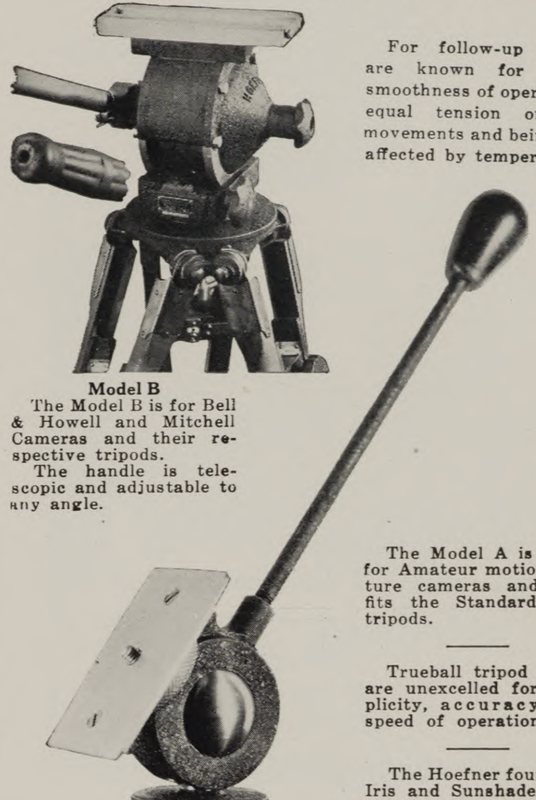

Model B
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Talkies Increase Tax

A REPORT issued by the customs and excise commissioners shows that taxes on entertainments have increased 700,000 pounds, or approximately $3,500,000, during the past year.

This gain is recorded in spite of England's 5,000,000 pound drop in general revenue for the year.

The increase in entertainment revenue is attributed, in a large measure, to the large number of sound installations in theatres. Talking pictures are credited with bringing thousands of new patrons.

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Next!

DISTINCTION of being the smallest town in the world with talking pictures is now claimed by the village of Hayes, La. Sound equipment has recently been installed in the Magnolia theatre there, operated by Felix Herbert. The town's population is given as 80.

New Pathe Natan Paris House

PARIS—One of the two new Pathe Natan houses constructed on the Champs Elysees has been opened. It was originally planned to call the theatre, which seats 1,200, the Elysee Palace, but the name has been changed to Ermitage Pathe.

●

Start the New Year RIGHT!
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Hal Mohr Picks Year's Cinematographic Plum

AFTER some thirteen years of preparation, the life of George Washington is at last coming to the screen. Sponsored by the United States Government and financed by C. H. K. Curtis, head of the Curtis Publishing Company, and Clarence McKay, of the Postal Telegraph Company, the picture will be started in February, according to present plans.

Hal Mohr, President of the American Society of Cinematographers, has been signed as Chief Cinematographer for the picture. Six months will be the shooting schedule, and Allan Crosland will direct. Belle Bennett has been chosen to play the role of Martha Washington, but no other members of the cast have been selected at this writing. Plans for the picture have been going along very quietly for some time and no publicity splurges have been made. Every effort will be made to make this the greatest picture of the coming year. Part of the picture will be shot in Hollywood and part in the East at Mt. Vernon and other locations.

Banks Directing Sixteenth

LONDON—Monty Banks is now directing "Show a Leg," his sixteenth comedy for B. I. P. in the past year. Leslie Fuller is enacting the title role, supported by Molly Lamont, Franklyn Silver, Sid Lewis and Alf Goddard.

Rex Ingram's First

PARIS—Rex Ingram, recently signed to direct for Paramount in France, will make as his initial vehicle under this banner, "Le Dieu De La Mer" ("God of the Sea"), at Saint Maurice.

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Stanley H. Twist

WORD has just been received that Stanley H. Twist has left the Bell & Howell Company, where he was general manager of the Sales Promotion Department, and has become Sales Manager for the Metal Specialties Manufacturing Company, 338-352 North Kedzie Avenue, Chicago, Ill. This concern builds the Presto Spray Painting Equipment.

Instead of facing the coming year with a frown and a feeling of pessimism, Mr. Twist and the Metal Specialties Manufacturing Company are putting into effect a well organized extension program, and predict an unusually successful year ahead. It was because of the desire to give this program a substantial start that Mr. Twist was secured as Sales Manager.

Mr. Twist has a long and successful record of both sales promotion and advertising to his credit, and his legion of friends wish him more than well in his new position, where he will be associated with L. W. Golder, Treasurer and General Manager of the organization.

Varanus Komodensis

(Continued from Page 13)

Tho to all outward appearances the reptile may look and act as a prehistoric monster, there is little reason to believe that he is any missing link or survivor of a lost period. Rather the evidence points to the fact that he is still in a period of development, and given a chance to feed, there is no doubt that he would grow to a far greater size than he is now, as has been proven by one which has been in captivity in the Soerabaja zoo for some years. Unfortunately for the Varanus, he has little food, and in consequence his development is retarded. According to the last information from Buitenzorg, there will be no more specimens allowed out of the country, as they are now making a survey and will no doubt in time turn the island of Komodo into a preserve.

Ruby Exchange Moves

RUBY CAMERA EXCHANGE, headed by Irving ("Ruby") Rubinstein, has moved headquarters to the second floor at 727 7th Ave., New York, where he now has the entire floor. The portable sound projector factory at Long Island City has also been switched to the new quarters.

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(Continued from Page 17)

Specification of Characteristic

In gas-filled cells, on the other hand, the effect of voltage must be taken into account. For the standard gas-filled cells considered earlier, the current for some standard illumination (e.g. 0·1 lumen) at the standard voltage will suffice, but others will require more information. This information is often given by a series of characteristic curves of the cell (i.e. curves relating current and voltage) for a series of different illuminations. These curves are very useful and should be encouraged. The illuminations for which they are drawn should be standardized. When white light is to be used, the illumination should be given in lumens from the standard illuminants; curves for 0·001, 0·01, 0·1, 1·0 lumen are suitable. For cells to be used in the ultra-violet the illuminations are probably most conveniently stated in terms of the primary photo-electric current that they excite, so that the ratio of the ordinate to the figure marked on the curve gives the magnification due to gas-filling at the corresponding voltage. This method, however, is not wholly satisfactory. It gives the user more information than he wants—for a cell is seldom used at intermediate voltages—and it makes it difficult to take account of the inevitable variations between individual cells; it would be impossible to give a complete set of curves for every cell. It might be desirable therefore to supplement a set of curves generally representative of cells of a given type by some smaller amount of information relating to each cell. Thus there might be given the ratio of current to illumination

(1) at a voltage so low that it represents roughly the emission of the cathode,

(2) at the highest practicable voltage.

For (1) a voltage of 20 would be suitable; for though the current at this voltage is not always equal to the saturation current in the absence of gas, the ratio of this current to the saturation current does not seem to vary very greatly in cells of different types. For (2) it is necessary to define the highest practicable voltage. It might be taken as that at which the current increases by x per cent. (where x should be less than 10) for an increase of 1 volt in anode voltage, the illumination being so small that any further decrease of it does not change this figure. It is cleverly desirable to choose a small illumination for this purpose, because it is then that the maximum voltage is most important.

Other properties affecting materially the performance of the cell are the insulation resistance, the "dark current," and the stability. In any specification on which the acceptance of cells is to be based some account should be taken of these. The first two are, of course, to be specified in ohms and amperes respectively; the third, which is (or ought to be) important only in gas-filled cells, should be determined by the change in current over some period (say 1 hour) when the cell is subjected to a prescribed voltage and illumination; it is also necessary to determine whether the cell is or is not to be raised to its glow potential before the stability is determined, for the stability is usually greater if the glow discharge is first passed.

All-Metal Variable Gear Put Out by Link Belt Co.

A VARIABLE gear for speed transmissions, said to be the first all-metal product of its kind on the market and to consist of two pairs of wheels of the opposed conical disc type, between which a chain of special construction transmits power, has been put out by the Link Belt Supply Co. of Chicago. All the elements of this new mechanism are covered by an oil-tight housing which are automatically splash lubricated when in operation it is claimed.

Foreign Notes

Pathe-Rural Marketing Low-Price Talker Device

PARIS—Pathe-Rural, manufacturers of low cost projection equipment for silent films, 6,000 of which are now in operation in rural districts of France, is planning to market an inexpensive sound apparatus invented by Vial-Coutarel. This device will be adaptable for both silent and talker pictures, and will also enable exhibitors with present Pathe-Rural machines to change over to sound. In addition, the company will issue films in sound and silent versions.

●

Imitates Hollywood

A BUILDING company in the west of Berlin has changed its name into "New Hollywood, Ltd." and intends to erect studios, laboratories and dwelling houses forming parts of a future city near Berlin. These plans may not eventuate in the near future, since the company has no important financial backing; the originator is an enterprising builder and estate owner, Heinrich Mendelssohn.

●

Czech Industry Seeks American Co-operation

PRAGUE—Cefid, the motion picture co-operative society of Czech directors and artists, financed partly by the Czechoslovakian government, is making efforts to enter into connections with English film workers in order to establish common production of Czech and English talkers.

●

Audible Takes Second Welsh House

LONDON—Audible Filmcraft, which recently acquired control of the Lyceum, Newport, has now taken over the Pavilion, also in Newport. W. J. Wiffin, manager of the Lyceum, has been appointed general manager of the two houses.

●

Ufa-Emelka Plan Paris House

PARIS—M. Kohan, financier and member of the Emelka board of directors, is reported to be making plans for the building of a house here for the screening of Ufa and Emelka productions. Emelka, it is said, will first produce French and German talkers and then add English and Spanish.

●

New Kinema for Bournemouth

BOURNEMOUTH, ENG.—Plans are under way for the erection of a new Theatre Royal on Westover Road. The new house will be located next to the Regent, and opposite the Bournemouth Pavilion.

●

W. P.-Gaumont to Produce One

LONDON—Welsh-Pearson has joined forces with Gaumont for the production of "East Lynne on the Western Front." The film will soon be placed in work at the Shepherd's Bush Studios, under the direction of George Pearson, with Herbert Mundin as the star.

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